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WHERE are a few things which may be spoken of to advantage at this time, in explanation of the routine of the business management of this journal. First, as to the delivery: every copy, except those for Boston and New York, goes through the mail, and, except in the case of large cities where there are many subscribers, each subscriber's copy is rolled. All copies intended for subscribers in large towns are made up in one or more large packages, and reach the office of delivery *perfectly flat and uninjured;* whatever treatment they receive after this depends on the humor of postal-clerks and letter-carriers. We are in no way responsible for any *folding* or *creasing* of a copy, and yet we receive constant complaints. As cures for this evil we suggest a modest *douceur* for the letter-carrier, whose pouch is large enough to receive the journal unfolded, if it is made worth his while to think so, an enlargement of the letter-slit in the office-door, or the establishment of a suitable letter-box at the lower entrance. As to delivery by hand, it is to be borne in mind that carriers are human and architects' offices are far above ground, so that a certain amount of shirking by a weary boy or man is inevitable. Next, as to remittances: A certain number of subscribers pay their subscriptions promptly at the end of the year, before they receive their annual bills, and yet complain that they immediately thereafter receive a bill, not stopping to reason out that the remittance and the bill crossed each other in the mails. Changes in the dates upon the address labels are made once a month only, and if this is remembered we shall be spared another series of fault-finding. To prevent another line of complaints, which we anticipate, we will state that the gelatine plates will probably be issued with the last number for each month, though it is possible they may appear with some irregularity.

WE must say a word, too, about our somewhat formidable-looking bill-head, which is the cause of our receiving an occasional insulting letter from a peppery subscriber, who cannot perceive the difference between saying the same thing in print, to all alike, and saying it in writing, to himself alone. There are two ways of conducting a subscription business: one, to cancel the subscription at its expiration; the other, to let it run until the subscriber definitely orders it to be cancelled. The first is the fairest and most equitable for both parties, but it is only possible to daily papers or to magazines with large subscription lists, where a majority of the subscriptions do not terminate at the same date. The second is the course which has to be followed by technical journals whose circulation is restricted. The courts recognize that the onus in such cases rests with the subscriber, and the Government recognizes it by providing post-masters with printed forms for notifying publishers that a subscriber wishes to discontinue his journal. Take a concrete case, our own, for instance: what would happen if we should cancel all subscriptions at the date of their expiration? The circulation would drop at once from thousands to hundreds, at the beginning of a year, since all but a few subscribe for the even year. Then would come a deluge of complaints from subscribers who felt themselves, and whom we felt, to be permanent subscribers, and a demand for the omitted numbers, which we might not have provided for. The matter is complicated, too, by the liberal policy we have adopted of carrying a stock of back issues. A person who intends to be a regular subscriber to a daily paper, but who chances to be cut off, never thinks of asking for the copies he has missed, and could not get them if he did. With us it is different, for we know the journal is kept and bound at the end of the year, and we have to provide for replacing missing numbers, and should we provide too large a stock for this purpose, our loss would be great, as the expense of manufacturing such a paper as the *American Architect* is not small. In short, the system we follow is rather in the interest of our subscribers than in our own, and we must be allowed to continue to use our inflammatory bill-head, for, thanks to it, our losses through delinquent subscribers have been much lessened since its adoption. In conclusion we must ask our subscribers to be reasonable in their complaints at all times and particularly just now, when the division now making between "gelatine" and "regular" subscribers vastly complicates our work and increases the possibilities of making blunders.

AN advertisement in the English papers reminds us of an experiment of our own, which may be of interest to our readers. The advertisement in question gives the address of a manufacturer of india-rubber socket-rings for the joints of hot-water pipes. These rings are much used in and about London for jointing the hot-water pipes employed for heating greenhouses; and having seen the method highly commended in the English horticultural books, we tried, not long ago, to get some rings for a small greenhouse in which we happened to be interested. No rubber manufacturers that we could find, however, had ever made or heard of such things, and Mr. Hitchings, of New York, an excellent authority on such matters, although he knew that the rings were used in England, had never seen them applied, and thought they could not be obtained in this country. These difficulties only made us more anxious to try the experiment, and we had some rings made, according to our own rather vague idea of what they ought to be, which, however, succeeded very well, and have so far proved tighter than either the red-lead and oakum joints, of which four were used in connecting an expansion-tank, or the rust joints employed in another greenhouse constructed under our care at about the same time. In fact, only one of the rubber ring-joints has leaked at all, and this is already closed, as the English books explain it, by the gradual adaptation of the rubber to the inequalities of the two surfaces with which it is brought in contact.

THE method of forming the new joint is very simple. The ring which we used is of round rubber, three inches in diameter, the diameter of the section of the rubber being three-eighths of an inch. The pipes on which they were used are four inches in external diameter, and the hubs are four-and-one-half inches. The ring is placed over the spigot end of the pipe, as near the end as possible, and the pipe then pushed into the hub. The ring rolls back, as the pipe is pushed home, but of course moves through a much shorter distance, and, by the time the spigot end of the pipe reaches the bottom of the hub, the ring has been rolled about half-way down, and remains there, compressed between the hub and the pipe into an elliptical section, the minor diameter of the ellipse being, about one-quarter of an inch. This compression causes the soft rubber to fill the irregularities of the castings, making a good joint with a comparatively rough pipe. As it takes but a moment to apply the ring, and push the pipe into its place, the joints are very rapidly made, and they can be taken apart and re-made with equal ease if it should be necessary, while the elasticity of the connections permits adjustments of the pipes, after they are put together, which would be impossible if rust joints were used, without breaking the pipes, and could not be made without causing red-lead and oakum joints to leak badly. In our own case this quality of the ring joints enabled us to take out a pipe, and substitute a longer one, with a vapor pan on it, without disturbing the other connections, except to push the adjoining fittings far enough aside to allow the old pipe to be taken out and the new one slipped into its place. How durable the joints will be we cannot tell, although they are said to remain sound in England for "many years," and are much less liable than caulked or rust joints to leakage from the alternate expansion and contraction of the pipes.

A CURIOUS experiment was shown a year or two ago, in which a long glass tube was filled with earth, and sewage poured in at the upper end. If the tube was long enough, perhaps six or eight feet, the liquid issued from the bottom clear and pure, its dissolved and suspended organic matters having been oxidized by the soil. If, however, before pouring in the sewage, a little dilute chloroform were allowed to filter through the earth, sewage subsequently applied passed through the tube without change, the oxidizing action of the soil being completely suspended. After some hours, or days, the soil regained its oxidizing quality. This experiment was believed to show that the oxidation of organic matters in sewage was something more than a chemical reaction, and that it depended, at least to a certain extent, on the presence of small living organisms, whose activity could be temporarily suspended by an anæsthetic, and with it the oxidation of the sewage. This theory has now been confirmed by additional observations, and the little creature which converts into fixed and harmless salts the putrefying impurities of such sewage as it can reach is believed to be a micrococcus somewhat resembling the yeast plant. Many and varied tests have been made to determine the conditions under which the disinfecting microbe lives and acts, and a good deal has been learned about its habits. It is found that it flourishes best, and is most efficient, at a temperature of about ninety-eight degrees Fahrenheit, nearly the temperature of the blood. At higher or lower temperatures its action becomes more feeble, and ceases altogether near the freezing point, or above one hundred and thirty degrees. Experiments to show its distribution in a clay soil, show that it is most abundant in the upper six inches, but is found to a depth of a foot and a half. Below that depth it cannot live, and soil taken more than eighteen inches below the surface has hitherto always failed to induce any change in nitrogenous solutions to which it was applied. These experiments cast a great deal of light upon many questions of sewage disposal by subsoil or surface irrigation, and further tests, made with some reference to this, would be easily made, and extremely valuable. It is found, for instance, that nitrogenous solutions, in order to be acted upon by the oxidizing ferment, must be alkaline, acid liquids remaining unaffected. This observation shows at once that where sewage is to be purified by irrigation, chemical wastes must be kept out of the drains. Normal house sewage is generally slightly alkaline, and in good condition for conversion, but the admission of the acid or poisonous wastes from a dye-house, metal-working shop, or manufactory of any other kind might render the sewage of a whole town incapable of purification.

La Semaine des Constructeurs gives some details of asphalt paving, which have a good deal of interest. The account begins by mentioning that asphalt makes a better pavement in London than in Paris. The same material that is used in Paris, put down in London by French workmen, gives a smooth and durable surface, which remains good long after the same work in Paris would have been worn into holes and ruts. The reason of this is probably to be sought in the difference of climate. Nothing is so unfavorable to asphalt as alternations of heat and cold, and the mild, even English climate is well suited to it. Another cause of the inferiority of the Paris paving is said by *La Semaine* to be the continual digging up of the streets for laying drains, water and gas pipes. Although the trenches are immediately refilled, the earth in them is soft and compressible for a long time afterward, and an unyielding foundation is the first essential of every good pavement. The repairs of asphalt in London are also much more carefully made than in Paris. Every depression is attended to before it forms a hole: the imperfect asphalt is taken out, and with it the concrete foundation; the place is then cut out, with vertical sides, and in a square or rectangular outline, well into the sound surrounding pavement. If the subsoil is disturbed the place is filled to the proper grade, and allowed to settle for several days, and then thoroughly rammed. New concrete is then laid, and covered with boards until it has set properly; and, finally, the asphalt coating is restored. Of the cheaper varieties of artificial asphalt paving the Grahamite, used extensively in Washington, is most favorably mentioned. This, as our readers know, is composed of sand, powdered limestone, and Trinidad asphalt, mixed with about twenty per cent of petroleum. The artificial pitch is added to the sand and limestone in the proportion of about one of pitch to one of limestone and five of sand, and the mixture is spread in two separate layers over a bed of concrete. A similar pavement has been tried in Paris, and is found to answer very well in streets where the traffic is light. In much-frequented thoroughfares it does not last long.

THE American railway companies which depend for their income in part on the transportation of emigrants might do well to observe the arrangements which have been made by the General Transatlantic Company of France to secure business of that kind by the certain method of making their passengers comfortable. As about twenty thousand persons a week cross the Atlantic, paying a good price for their passage, there is a constant competition among the foreign steamship companies for their patronage. The ancient days of emigration, when this country received as a citizen any one who chose to come, without inquiry as to his character, are now over, and every person who lands at Castle Garden is obliged either to show that he is capable of supporting himself here for at least a limited time, or to take passage home again by the next return ship; so that the class of emigrants now carried is composed of people who have saved up some property, and having been accustomed to living in a certain degree of comfort, are not disposed to put up with the dirt and disorder which were once considered good enough for steerage passengers. The General Transatlantic Company has the reputation of providing carefully and liberally for its poorer patrons, but most of the emigration is from Germany and Switzerland, and the neighboring region, and the expense of travelling by rail across France to the port of embarkation at Havre adds so much to the cost of the journey that passengers who are obliged to economize prefer the longer, but cheaper route to New York by way of Hamburg, Bremen, or Antwerp. In order to offset to a certain extent this disadvantage, the Transatlantic Company has now put on regular emigrant trains, running through every day from Basle, which is a great railway centre for the whole of Central and Southern Germany, Switzerland, and Italy, to the steamship wharf at Havre. The trains leave Basle at hours regulated by the tide at Havre, so that on reaching the ship, after a ride of twenty-one hours, they can embark and set sail without delay. In order to attract custom, the emigrant train is furnished with cars differing completely from the ordinary third-class "coach" in Europe, but reproducing minutely the ordinary American passenger car. As with us, a clear passage is left through the whole length of the train, and the cars, which are very long, and hold eighty passengers each, are warmed by hot-water circulating pipes, and a boiler in one corner, just like those on our best-managed roads. Other luxuries, familiar to us, but almost unknown abroad, are added, in the shape of a drinking-water reservoir, and a water-closet in each car, with a wash-basin; and there are some special features, such as cradles, to the number of a dozen or more in each car, which must add greatly to the comfort of the families who travel in the trains. Very capacious places are provided for the hand-baggage, of which poor emigrants always carry immense quantities, and the Swiss, or Tyrolese, or German, or Piedmontese peasants can take their last look at the Rhine or the Alps from the windows of the car in which they remain, warm and comfortable, until they arrive alongside the ship which is to carry them to the New World. To the untravelled and simple villagers of the interior provinces, this is a great satisfaction, and it is no less for their benefit that the officers of the Transatlantic Company are enabled, by the same arrangement, to keep an oversight over the whole company, and guard them from the tricks of the swindlers and parasites, who, as *Le Génie Civil* says, profit by the ignorance of the poor emigrants to defraud them. The care of the company is not confined to mere oversight. To each train is attached a dining car, or rather, a refreshment counter, where meat, bread, and other viands are dispensed at cost price; while coffee is distributed gratuitously through the whole train twice a day, and milk for children can be had at any time for the asking.

A CORRESPONDENT asks us for references to adjudicated cases bearing upon the right of an architect to be paid for drawings and specifications for buildings not carried out. We are very sorry not to have been able to look up references in the law reports, but his counsel has undoubtedly done so. When the index to cases affecting architects and builders, which we have had for some time under way, is completed, we shall be able to answer all such questions promptly.

THE PERSONAL EQUATION IN RENAISSANCE ARCHITECTURE.[1]

Panel in the Monmouth Battle Monument: N. J. Subject, "Ramsey defending his Gun" designed by J. E. Kelly: N.Y.

IT is a truism to say that the qualities of Gothic and of Renaissance civilization are graphically expressed in their respective arts, and that the characteristic differences between these two arts constitute the most suggestive evidence of the conditions of the societies out of which they grew. Referring to architecture in especial, I ask you to consider with me some of these differences, with a view to ascertaining the true functions of the men who were more immediately concerned in producing them. Writers of general history collect and analyze traditions, documents, and archives with infinite patience and industry, but the evidences of architecture are inaccessible to them, because those who have written upon this subject have confined their studies rather to its external and technical manifestations, as to a development of natural forces, than to the human interests, from which they proceeded; the human wants, to which they were adjusted; the human skill, which gave to them character and direction. Behind every apparent form in architecture is a human motive, and a great monument, therefore, which is a concert of innumerable forms, must, as I conceive, constitute an invaluable record of the civilization which produced it. It is not merely an incident in the history of architecture, but an incident in the history of mankind. I am persuaded that the time is not far distant when it will be possible to predicate from the internal evidence contained in such a work, the true genius of the times, the bases of contemporaneous history. Thus the Cathedral of Paris, to take a familiar example, if it could be properly analyzed, would be found to contain not only all that it is essential to know of the spirit of the Middle Ages in general, of the fall of the monastic orders, of the decay of feudalism, of the birth of civil liberty, but in specific detail all the religious, social, and political life of the time; and this not so much because it is a great municipal and ecclesiastical monument, but because it is a work of art.

Mediæval architecture was a gradual and steady evolution of structural forms, with but little influence from external traditions, and under exceptional conditions of enthusiastic devotion and religious zeal. It was saved from barbarism and savagery, first, by the learning of the cloisters, and afterwards by the coherence of the lay architects or masonic guilds, which preserved, developed, and transmitted a compact and consistent body of building traditions. The process of evolution progressed with amazing rapidity; it pushed Gothic art to its highest expression in the thirteenth century, and in the fifteenth, this art had said all that it had to say; it had become an architecture of *tours de force* of conceits and grotesques; as its strength failed, it became attenuated and affected, and at the end, the skill of the craftsman triumphed over the inspiration of the artist. It was, I say, an architecture of structural evolution; and so long as the evolution continued in a healthy condition, it was as free from abnormal examples as the evolution of any animal or vegetable type in natural history. The successive buildings of the style were links in a continuous chain, each one essential to the development of the type. By this series of tentative processes the art of constructing roofs with small stones, progressed from the simplest and most timid vault to the most complex and daring, each step in the progress involving changes more or less fundamental in the supporting walls, piers, and buttresses, and hence affecting the entire structural and architectural character of the buildings.

But it should be understood that a mere evolution of structure cannot in itself constitute a style of architecture. We have in modern times, an evolution of structure, which, like the Gothic art, consistently "broadens from precedent to precedent;" absorbing into itself all the inventions and discoveries of science in the art of building; but this evolution is in the hands of engineers; it appears in the steady and admirable progress of achievement in monumental works of severe utility, bridges, aqueducts, sewers, canals, embankments, factories. But this is not art, because unlike the Gothic evolution, it is not in the hands of artists. The function of the modern engineers, and that of the lay builder of the Middle Ages differ in this important respect: the one develops a theory of construction with a view to obtaining perfect fitness and stability in the most direct and economic way possible; the other, in like manner, aims at fitness and stability by the use of scientific and technical methods, but he confers upon his work beauty as well as fitness, grace as well as stability; he decorates his construction. A Cistercian abbey, in its austere, unornamented construction, shows how a work of engineering may be made a work of art. A Christian abbey is no more a work of art, because of its superadded luxury of sculpture and splendor of color. The modern engineer gives us prose, the Mediæval builder gives us poetry.

In the beginning of the period of the Renaissance — the Gothic tree having exhausted itself with blossoms — there was grafted into its enfeebled stock a new shoot, which, with the advancement of learning, and the growth of the human mind, gradually, but surely changed the character of the Mediæval forms, until at length they disappeared entirely. Indeed, so completely did this new influence take possession of the human mind, that after hardly a century of transition, the vast poetic monuments of Mediæval art became in the midst of the new civilization not only barbaric enigmas, but objects of insult and contumely. Even the antiquary neglected them, until the middle of the seventeenth century, while Inigo Jones was building a Corinthian portico on the west front of the old Gothic St. Paul's, of London.

This new principle of art was based upon an architectural formula, the Classic orders. This formula was the standard by which architecture henceforth was to be measured and corrected. If Mediæval architecture was a system based upon the free development of structural forms, that of the Renaissance was based upon authority and discipline. The Classic formula was recognized as the embodiment of the spirit of the antique world, by means of which alone, it was thought redemption from Mediæval barbarism, and revival of civilization were possible. The essence of this formula was an arbitrary system of proportion composed of isolated columns or attached pilasters supporting entablatures. The former were composed of bases, shafts, and capitals; the latter, of architraves, friezes, and cornices. Each of these divisions was further subdivided into mouldings, and as all these parts had developed together, and got their shape by mutual adjustment after many trials, as with the advancement of refinement artists became curious in respect to the shape and relative disposition of these subordinate parts, the result was finally the highest expression of architectural style known to mankind. Though this delicate and precise mutual adjustment might have been reached in other styles, as in Gothic, it has only been reached in the Classic, and the examples of it are the so-called orders of architecture. It is their advantage that they were developed in actual use — not by theory, but by practice — and that they grew into shape, embodying in their modifications the experience and feeling of successive generations of Greek and Roman architects. As they were received in the fifteenth century, they had undergone the final revision of the great Italian masters of the Renaissance, who studied their proportions with the last degree of refinement, and recorded them exactly. They conferred upon the coarse Roman orders a degree of perfection rivalling the perfection of the Greek orders. The ancient Romans, in taking their forms from the Greeks, had vulgarized them; but the Italian masters nearly restored the purity of the original type. So developed, these Classic orders are the key to almost all that has been done in architecture to our day.

Now the Classic formula thus revived and rehabilitated, because it represented perfection of proportion, could have no career of evolution in the Gothic sense. Perfection cannot be perfected; it can only be adorned. In fact, the essential principle of the architecture of the Renaissance is a scheme of decoration based upon a dogma of proportion.

To our present purposes it is important to observe that the invention and application of ornament to structure in process of evolution is a very different thing from the invention and application of ornament to a rigid formula of proportion. The consideration of this difference brings us at once to the point to which I would draw your attention.

"Architecture," says M. Veron, "even when considered from the æsthetic point of view, remains so dependent upon geometry, upon mechanics, and upon logic, that it is difficult to discover accurately the share our sentiment and imagination have in it." This is certainly true of Gothic art, because its character rests upon geometry, mechanics and logic, applied to the harmonious and consistent evolution of structure. But M. Charles Blanc observes of this architecture that "every structural necessity became a pretext for ornament, and the most capricious conceptions were in reality nothing more than contrivances for embellishing the work, forced upon the artist by the inexorable law of gravitation." This is equivalent to saying that Gothic art was an art of construction more or less ornamental. Now ornament is the product of sentiment and imagination, but the invention of ornament in such a service as Gothic art did not call for the highest artistic effort in this domain. The grouping of pinnacles upon buttresses, the filling of apertures with rich tracery, the fretting of sky-lines with crockets and finials, the decoration of wall surfaces with an embroidery of cusped arches and canopied niches — this sort of work was not the labor of illustrious masters, but of nameless trained craftsmen; nay, even the iconography and symbolism which crowded the porches were part of a hieratic system to which the men who produced it were in the position rather of humble catechumens or neophytes, than of independent artists. Their labors were didactic, like the labors of writers and printers. The composition of ornament for its own sake did not become a leading principle until a new style arose, based upon a rigid formula which was itself perfection, and therefore, as I have intimated, incapable of progression. Under these circumstances, the variety demanded of art by the newly-awakened civilization was only obtainable either by distorting or degrading the formula itself, as was actually done in the eras of the Baroque, the Rococo, the Churrigueresque, or by overlaying it

[1] A paper read before the Monday Evening Club, by Henry Van Brunt.

with ornaments not necessary to constructive effects — with constructive ornament, in fact.

It is evident that this process of decorating without degrading the unalterable Classic type could not have been effected by traditions, or by any such anonymous body of trained artisans as kept the Gothic evolution in a workmanlike track. The contingency called into existence the modern architect, with his books and prints and his archæological equipment. The composition and application of ornament demanded a new and higher quality of invention and imagination, because ornamentation had become a far more important function in architecture. In short, the Gothic method resulted in an impersonal art; the Renaissance method necessarily led to a personal art. If Gothic art was the development of principles of construction applied to meet similar requirements, each experimental abbey or cathedral differed from its predecessor in exact proportion to the progress in the art of building vaults with small stones, not in proportion to the genius of the master-builder. The decoration of these structures was not an essential incident in this scheme of general development. No single monastic or lay builder could impress his individuality upon this mighty advancing tide. Its progress was made up of forces far too great to be turned this way or that at his bidding. He was the servant of evolution, and not its master; he made the evolution consistent, grammatical and beautiful, and in this disinterested service his name and character were lost. In like manner, if the earliest artists of the Renaissance had discovered in the Flavian amphitheatre, (as the first Romanesque builders did at Spalatro), a new principle of construction, capable of indefinite expansion in the wider fields of the new civilization, instead of an order of architecture, and if Francis I had carried that principle back to France with the spoils of his first Italian conquest instead of a crowd of Italian artists, the guardians of the ancient formula, we might have witnessed the phenomenon of another impersonal art, to the development of which, in the course of time, the genius of Philibert de Lorme, Pierre Lescot, and the Mansarts would have done loyal but anonymous service. If on the other hand, in the twelfth century, it had been possible to invest a certain form and proportion of vaulting and abutment with such peculiar sanctity that it would have been impious to vary from it henceforth in any essential particular, decoration would have at once assumed the first, instead of the subordinate place in the architecture of the thirteenth and fourteenth centuries, and, instead of a series of nameless masons and master-builders, we would have had a catalogue of individualities as illustrious and specific as that which confers its peculiar personal interest on the history of the Renaissance.

Now as to the evidences of the personal character of Renaissance art. Although the Classic formula was set up and accepted as absolute authority in the fifteenth century, although it has been used with veneration for four centuries up to the present time, and although every architect designing in the style of the Renaissance intends above all things to be *correct* in his use of this simple type, the result has been not monotony, not cold and colorless uniformity, but a variety of expression, hitherto unknown in art. Now in studying these variations as they are exhibited in the buildings of the Renaissance up to the present day, we shall find that they are not capricious or accidental; there was one class of variations in France, one in England, one in Germany, one in Spain, one in Holland, one in Italy. These distinctions of class are easily recognizable: they follow natural laws, they interpret national temperament or genius by a visible demonstration. Thus the French Renaissance abounds in elegant variety; it is nearly always refined, delicate in detail, and full of feeling and animation. The English Renaissance is for the most part unimaginative and heavy, feeble in invention, prosaic and dull; but it was not without its single era of great and original development, at the hands of Wren, after the London fire. The German follows the French at a great distance; where it has not been merely imitative, its principal characteristic has been cold correctness and pedantry. The Spaniard handles the orders with great freedom, and overlays them with a sort of barbaric but ungrammatical splendor, which is almost Oriental in its profusion and color. The Dutch variation was homely and honest, like the people. But in Italy the natural birthplace of the Renaissance, Vignola, Serlio, Palladio, Bramanti, Scamozzi first taught the world how true artists, holding alike to a rigid formula, could invest it with purity and delicacy; how they could be correct without dullness, precise without pedantry, poetic without license. These were the earlier Italian development; the later masters, betrayed by the contortions of Borromini, the undisciplined inventions of Bernini, the coarse magnificence of Michael Angelo, lost their purity in profusion, and vulgarized the type in their passion for grandeur. Still the Italians were always the true masters of the Renaissance, and the rest of Europe went to school to them. But we have seen that though the architects of France, England and Germany tried to imitate the Italian manner, they were always French, English and German; the national spirit betrayed them. All the forces of art were united in the desire to make the revised Classic forms cosmopolitan. They studied the same authorities, learned by heart the same formulas of proportion, copied the same monuments, but failed in their efforts to make a universal architecture. Indeed, there was not only a national impress left upon their works, but no two architects of the same nation could produce similar work. Each interpretation had a character of individuality; the phenomenon remains true to this day.

A late writer very happily said that "architecture tells us as much of Greece as Homer did, and of the Middle Ages more than has been expressed in literature. Yet," he adds, "it has been silent since the thirteenth century." This latter proposition is after the dogmatic fashion prevalent in modern English criticism. It is equivalent to saying that the personal equation in modern architecture, rendered necessary by the adoption of a formula as the basis of design, has prevented the art from exercising its natural function as an evidence of contemporary history, as it did when design was confined to the development of a theory of construction, in the series of Greek temples and mediæval cathedrals. The fact is that architecture, whether personal or impersonal, cannot be forced away from this function, even by the most determined exercise of the modern privilege of masquerading in the trappings of old forms of art. Indeed it is sufficiently evident that this very personal character imposed upon architecture by the conditions of the Renaissance, in rendering it more sensitive to exoteric impressions, has made it a more accurate exponent of the quality of the civilization which produced it than has been the case with any form of impersonal art, the characteristics of which must be largely due to internal forces. It is not so much its structural as its decorative character which makes the metropolitan cathedral a reflection of the life which swarmed about the market-place under its shadows, or entered its porches with banners. But if we survey the progress of mediæval French architecture from the time of Philip Augustus, in 1180, to that of Charles VII, in 1422 — from St. Bernard of Clairvaux to Joan of Arc; though in this era more than sixty cathedrals of the first class were built, involving an expenditure of more than $500,000,000 in our money (an activity in building operations unsurpassed in history), we shall find that no monarch and no court was able to impress upon it any characteristic which should enable us to distinguish any one phase of its progress as the style of Louis VIII, the Lion; or Louis IX, the Saint; of Philip III, the Hardy; or Philip IV, the Fair; of Charles V, VI, or VII. There are no such styles; the art of these reigns was an evolution of forces, and, as such, it was an impersonal art. If any phase of this evolution is identified by the name of a sovereign, this is purely a matter of convenience in nomenclature; it is not significant of cause and effect, for the art refused to submit to the caprices of any court.

On the other hand, when architecture had ceased to be a structural evolution, and was based upon a formula of pilasters and entablatures, enclosing imposts and arches, decoration, ornament assumed a function until then unknown, and there was a distinctive style corresponding to the character of each reign, often contrasting with curious abruptness. Thus we recognize a style of Francis I, free, elastic, poetic, romantic; of Henry IV, bold, coarse, grotesque, of Louis XIV, full of grandeur without, of pomp and splendor within (Viollet-le-Duc has called it "the new Renaissance"); of Louis XV, frivolous, licentious, ostentatious, Rococo; of Louis XVI, decent, orderly, pure to prudishness; of the first empire, a theatrical display of imperial Roman properties, meagre and tarnished; of the second empire, elegant, but profuse and luxurious, drawing its *motifs* from every historical source, but harmonizing them with a fastidious academical spirit; a style of to-day, too near to us to be recognized now in just perspective, but for which we will be held responsible in the next century. So there is a style of Elizabeth, of the Stuarts and Tudors, of bloody Mary, of Queen Anne, and of Victoria. So also in Spain, as Fergusson says, the enthusiasm and exultation and pride of Ferdinand and Isabella, and of Charles I are well expressed in the architecture of their times, until Philip II substituted, for the joyous and sunny exuberance of his predecessors, a cold, academical formalism, in full sympathy with his iron rule.

This scenic display is rendered possible by the fact, that the architecture of these eras must necessarily be saturated with the subjective personality of the architects, in order to its proper adjustment to the spirit of the times. In fact, the composition of ornament is like the composition of poetry; neither can be evolved from theory alone; neither can exist in definite shape save by virtue of the individual character, attributes and mental equipment of the author. It is his genius which confers upon it all its specific quality. It is his knowledge, his training, his convictions, his taste, which so adjust ornament to a formula of proportion as to confer upon it especial character and interest. It is true that a large part of Renaissance ornament, as of all architectural ornament is conventional. The enrichment of the order is obtained not only by the imaginative arts of sculpture and painting, which must necessarily be infused with personal genius like a poem, but by ornament of convention, which is common property, *i. e.*, certain types of ornament applied by general acceptance to the decoration of the mouldings, and other details of the order; but it is also obtained by a certain hardihood in varying its proportions. But the use of conventional ornament implies choice, discretion on the part of the architect, and these are surely personal qualities, and the variation of the proportions is an appeal to his academical training, to his knowledge of precedent, to his artistic feeling. If an ignorant man plays with proportions, the result is inevitably disgrace and vulgarity. He can produce successful results, only by an abnegation of himself, and is only acceptable when he follows the Classic formula with unimaginative fidelity. It is only the scholar who can handle his orders with freedom. The advancement of archæological learning, the accumulation and accessibility of architectural precedent, in making it impracticable to the modern architect to build better than he knows, have inevitably forced him into an increasing degree of self-consciousness in his work, and in depriving his work of the grace of innocence and naïveté, have made it a more sensitive index of his individuality. The picturesque and romantic days of an impersonal architecture will return no more.

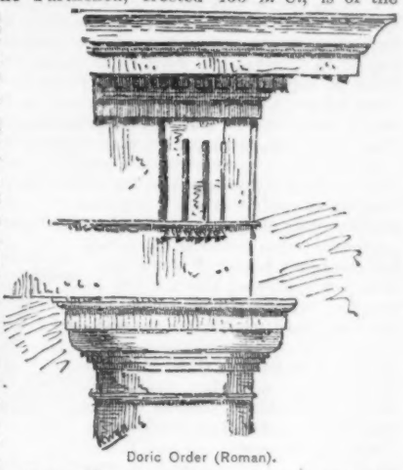
A SKETCH OF THE HISTORY OF ARCHITECTURE.[1]

IT is not possible to determine the exact date when the Hellenic nation, no longer connected with the Pelasgic tribes of Asia, began upon the outlines and ideas collected by their forefathers, to perfect a style of architecture for themselves, suited to their character, religion and climate; to complete that great work, the foundation of the art to which nation after nation had been adding its portion for a period of no less than three thousand years. The very earliest structures that have any claim to the term "art" are discovered in Egypt, and date as far back as 3900 years B. C. It was then the inhabitants first conceived the idea of erecting for their chiefs and rulers indestructible edifices, wherein the embalmed bodies might repose, undecaying, in security and peace, until they should again be called into life, as their traditions led them to believe would ultimately be the case. It is interesting to trace the advancing steps through the centuries that intervened between this early date and the time of which we write. The research carries us up and down that mysterious country, Egypt, about whose early history so little is definitely known, and of which so much is conjectured, and we contemplate with awe and amazement the great monumental excavations, elaborately decorated with hieroglyphics, by which each chief sought to hand down to eternity a record of his good deeds. As time proceeds, we find in place of rock-cut tombs enormous temples, gigantic pyramids, and lofty obelisks, and in each is seen an ever-increasing development of what may truly be called the germ of art. The authors are taking Nature as a copy, using pillars and columns roughly cut to represent bundles of reeds, and the tops of these are gradually formed to represent the well-known lotus-flower and other leaf forms common to the country. But as the glory of the monarchs of Egypt began to decline, the art was taken up by the Assyrians and Chaldeans, nations whose countries were at no very great distance from Egypt, and whose principal commercial enterprises were carried on with that country. Here have been found temples of a character very different from any previously erected: buildings carried to a great height, instead of being all of one story. The decoration, too, is of a type that we have not met with before. The Chaldeans were a people devoted to the worship of the heavenly bodies, and they decorated their temples with the colors assigned to each of the seven planets to which they were dedicated. Their sacred enclosures were not surrounded with solid walls, but with simple, lofty columns, standing singly at a distance of many feet apart. But the Chaldeans, also, wise in all the mysteries of the unseen future, were destined to perish utterly from the face of the earth. From Chaldea we are led northward and westward, and through the entire length of Asia Minor, and in the examples now at our feet we find the immediate forerunners of the Grecian art.

The Pelasgic races of Asia Minor and of Greece were intimately connected in friendly relationships for many centuries, until the Phrygian Prince carried away the beautiful Helen from Sparta to Troy, which outrage brought about a deadly animosity between the two countries, that took many years to die out. From this date, nearly five centuries, occupied with civil war, elapsed before any farther advance in the progress of the art can be noticed. Greece had been inhabited by numerous tribes, and the Hellenes proper had originally been but one among the many. Gradually they gained a reputation above that of any other tribe, and finally acquired an influence over the whole country to such an extent that all the other tribes became assimilated to them.

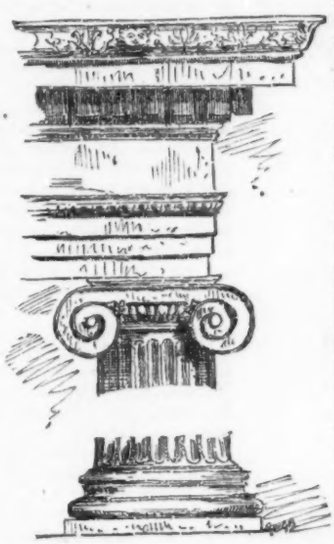
By the middle of the seventh century B. C., mere utilitarian architecture was giving way to more ornate erections, and when the country was at peace, and the Greeks were able to turn their attention to the arts of peace, many forms of great beauty were already discovered, and there were many examples of construction for them to improve upon.

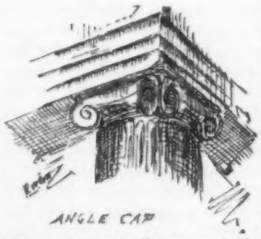
Even so far back as 2000 B. C., at Beni Hassan, in Egypt, pillars had been constructed of a decidedly "Classic" form, and the Beni Hassan type was greatly improved upon by the architects of the great temple of Karnac, and it is difficult to refuse the evidence these examples give of the origin of the forms adopted by the Greeks. The earliest example of Grecian architecture of this kind appears to be of the date 650 B. C., and is the temple of Corinth. Very little of this now remains, but there is sufficient to show how extremely massive and ponderous it was. Next in time comes the temple of Ægina, probably a century later. But the temple of Theseus, at Athens, constitutes a link between the Archaic and the perfect age of Grecian art, more perfect than the temple of Ægina, but not so perfect as the Parthenon, its near neighbor in locality and date. The Parthenon, erected 438 B. C., is of the Doric order, and is an excellent example of true proportion in every particular. The height of the column is 6.025 diameters, which is an increase of one and one-half diameters upon the height of the earliest example, the temple at Corinth. With this order, sculpture and painting are essentially connected. The metopes, the face of the pediments, and other features were all carved and colored. This was the height of perfection to which the Doric order attained, and from this date its decline began. The attenuation of its columns and the diminished height of the entablature are among the principal features of its decay.



Doric Order (Roman).

The Ionic Order, growing out of the declining Doric, takes up the lofty, slender columns, and gives them a proportion and perfects a style to suit them. This new order is much more complete in itself than was its forerunner, and depends less upon the assistance of color to relieve the dead stone. Those ornaments which in the former were merely painted, were in this cut and carved. The scrolls which had so long been in use as a decoration, both in paint and cut in wood or cast in bronze, were in this style brought forward and placed in a most conspicuous position, and were made to form the principal feature of the capital. A base was also given to the columns, but like all other details, of which the Greeks strove so earnestly to make us believe they were the originators, these bases have their antetypes in Egyptian temples erected fourteen hundred years before. The best example of this second order is the Erectheum at Athens, built 409 B. C. The original Ionic capital was never made to suit pillars in every position; it answered admirably so long as only a front view was obtained, but when placed at the angles of buildings, and two sides were seen, the architects had a difficulty before them which required an immense amount of study to overcome. The capital was originally square on plan, with the volutes at the front and back and abutting on the sides, so that at the side of a temple there would be some score of columns with their voluted capitals facing the spectator, but the capitals at each end, having their voluted faces parallel with the front and back walls, presented their sides to the side of the temple, and created a discrepancy and formed an eye-sore most distressing to the painfully symmetrical Greeks. The first attempt to improve this was to make a capital for the angle of the building, with two faces, and where the volutes met they butted at each other until each was forced beyond the base line at an angle of 45°. This was so obviously a makeshift, that although an ingenious way of overcoming the difficulty, it did not satisfy its authors, and after many attempts, which still exist, their efforts were finally rewarded, for they produced a capital very beautiful in its form and thoroughly adapted to its work in all positions. The arrangement was a square, having its sides all curved alike.



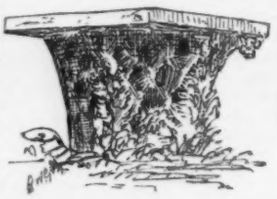


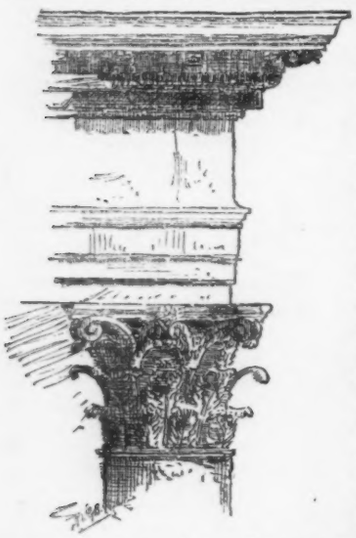
The suggestions as to the origins of these two orders, given by Vitruvius, are as ingenious as they are innocent. He writes, "Ion,

[1] A Sketch of the History of Architecture from the commencement of the Grecian Art to the Reformation in England, by R. W. Gambier-Bousfield, A. R. I. B. A.

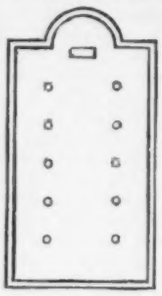
the son of Xuthus, building a temple to Diana, and seeking some new manner to render it more elegant had recourse, as before in the Doric, to the human figure, and gave to this new order a feminine delicacy." "That its appearance might be more lofty, he added a base in imitation of a shoe. The volutes, like the plaits of the hair hanging on each side, he gave to the capital, ornamented with fruits, or festooned in flowers; and furrows or flutings were wrought down the columns, resembling the folds or plaits of a matron's garments. Thus he invented two kinds of columns, in the Doric imitating the manly, robust appearance without ornament, in the Ionic regarding a female delicacy, accompanied with ornaments pleasing and elegant."

Vitruvius also gives a romantic origin for the Corinthian capital, and this is still held by many to be the correct story, but if we examine the existing examples we shall find that the earliest are unlike Vitruvius's prototype, and that in reality this third order grew out of the preceding one, and was perfected through many years. "A marriageable young lady of Corinth fell ill and died. After the interment, her nurse collected together sundry ornaments with which she used to be pleased, and putting them in a basket placed it near her tomb, and lest they should be injured by the weather, she covered the basket with a tile. It happened the basket was placed upon a root of acanthus, which in spring shot forth its leaves. These running up the side of the basket, naturally formed a kind of volute in the turn given by the tile to the leaf." "Happy Callimachus, a most ingenious sculptor, passing that way was struck with the beauty, elegance, and novelty of the basket surrounded with the acanthus leaves, and according to this idea or example, he afterwards made columns for the Corinthians, ordaining the proportions such as constitute the Corinthian Order."





The Corinthian order was only introduced into Greece on the decline of the art, and it was left for the Romans to perfect an order, which in Greece never rose to the dignity of a temple order. For the capital the curved abacus of the late Ionic was used, and the bell-shape discovered to have been in use by the Egyptians was here introduced. To this they applied the acanthus, in conjunction with the Assyrian honeysuckle, the latter supporting the scrolls at the angles. But to see this style in its perfection we must leave Greece and cross over to Rome. The form of the Greek temples was undoubtedly of Egyptian origin. Small peristylar temples were erected as early as the eighteenth century, B. C., and are common to all ages. The finest example of the so-called Corinthian order, then, is the temple of Jupiter Stator at Rome, which in richness and proportion, surpasses anything hitherto designed. But in the architecture of the Romans we have a great change. The true Roman order was an arrangement of two pillars placed at a distance apart, bearing a very heavy entablature, which in consequence of its length had to be supported in the centre by an arch springing from piers; the columns were raised on pedestals and placed in front of the piers. The arch was by no means a new method of construction, though hitherto it had only been used as a necessity, and not as a feature. Looking back again to the Pyramids of Egypt, which date from nearly 4000 years B. C., we find arch forms of the rudest construction, but perfectly adapted to their uses. Here is to be seen the pointed arch and the semicircular, as well as the simplest constructive arrangement — two large straight stones, raised one against the other over a space. It is true that the arches were all built with horizontal beds, and that the radiating bed was not known for centuries after, but the pointed arch to a drain or aqueduct at the Great Pyramid, and to the tombs in Asia Minor, are as true in outline as those of Christian churches. But to return; in a few years time the piers supporting the arches were done away with, the pillars taken down from their pedestals, and substituted for the piers, the arch sprang from the top of the columns, and the entablature was placed at a greater height above the crown of the arch. The characteristic of Roman architecture is the exaltation to importance of plain surfaces, and the subjugation of the order to them. The rectilineal form of plan was preserved for a time, but where the architects were not confined in space, their plans exhibit a great amount of irregularity, and even circular temples were attempted, and successfully carried out. Roman temples were extremely insignificant as compared with other buildings in their cities, and our attention is turned to the Government Halls — the Basilicas — which were considered of far greater importance. These were long, lofty buildings, principally rectilinear, but generally finished with a semicircular apse constructed in the centre of one end, in which were arranged the seats for the judges. An altar stood at the junction of the apse, and the main building at which those religious ceremonies were performed, which opened and concluded all public business. The main building was divided in most Basilicas into aisles by pillars and arches, but in some cases it was left clear, and the entire space covered by a roof of one span. These roofs were generally of wood, and of simple, utilitarian design. But what is this form of plan that we are describing, other than the origin of all Christian churches?



THE ILLUSTRATIONS.

PAXON & COMFORT'S BUILDING, PHILADELPHIA, PA. MESSRS. W. EYRE, JR., & W. E. JACKSON, ARCHITECTS, PHILADELPHIA, PA.

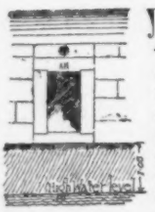
SKETCHES AT MANCHESTER-BY-THE-SEA.

PROPOSED CHURCH, PATERSON, N. J. MR. CHARLES EDWARDS, ARCHITECT, PATERSON, N. J.

HOUSE FOR A. R. SMITH, ESQ., BIRMINGHAM, CONN. MR. C. H. STETSON, ARCHITECT, NEW HAVEN, CONN.

POZZI E PIOMBI: THE PRISONS OF THE VENETIAN REPUBLIC.

. . . . Livida l'onda,
Che tra l'infausta reggia e le prigioni
Languidamente sta, geme sospesa
Sulle misere teste, e chiude l'eco
Che sol ripete del dolor le voci.
(*Antonio Foscarini, a tragedy by G. B. Niccolini, Act I, Scene IV*).



THE Republic of St. Mark having fallen in the fervor of the Democracy, the citizen Melancin proposed that the total destruction of the dreadful prisons, the Pozzi and Piombi, and also of the boxes for secret denunciations, should be decreed, and that the lions should be knocked to pieces, that the sight of them as emblems of a blood-thirsty régime, might not give uneasiness to the people in this new and joyful era. The citizen Widman applauding the proposition, added that he, having gone, together with other citizens to inspect those infernal places, had learned from the old custodians that by the ex-inquisitors two unfortunates had there been walled-in alive, some time before.

One might expect that the horrified assemblage would have run in mass to demolish the wall which closed the door, and gathered the remains of the supposed victims, but it is not believed that such a thing took place, because until now the above-mentioned door, or more precisely two of the doors in the prison are still sealed by single slabs of stone, forced against the lintels by iron wedges, and have the appearance of having been so closed for some hundreds of years.

He who visits the prisons of the Ducal Palace, which belonged to the Council of Ten, and are now called the Pozzi, mounts the loggia on the first floor inside the court, and trusts himself to the care of a guide, who, taking an oil lamp, precedes him into a dark room, and down a small staircase, leading to the first tier of cells. In order to enter these, one must stoop, the doors being rather low; over every one of them there is a hole, through which the food was handed to the prisoners; one of the cells still shows the wooden sheathing of the walls, with a small shelf and the plank which served as a bed. Having turned the corridor, the guide reaches the staircase leading to the lower cells, and if he fulfils his mission conscientiously, he numbers with measured cadence the thirteen steps, so as to create the impression of sinking under ground, and reaching the prisons which are supposed to be below the level of the canal. We enter one of the cells, then another; we read some of the inscriptions that the prisoners have scratched upon the walls; our attention is called to the fact that every door was closed by double iron shutters; we are told we enter the prison of Carmagnola, and that one in which the Doge Faliero was imprisoned. At the end of a corridor, feebly lighted by a small aperture, something resembling a step is pointed out to us; and we are told it is the place where the strangling and beheading was performed, by means of a machine, of which some traces remain upon the walls. Into a niche, a crucifix was placed, to which the condemned prisoner could cast his last look; the inclined pavement ends with a slab of stone which has several perforations through which, when the

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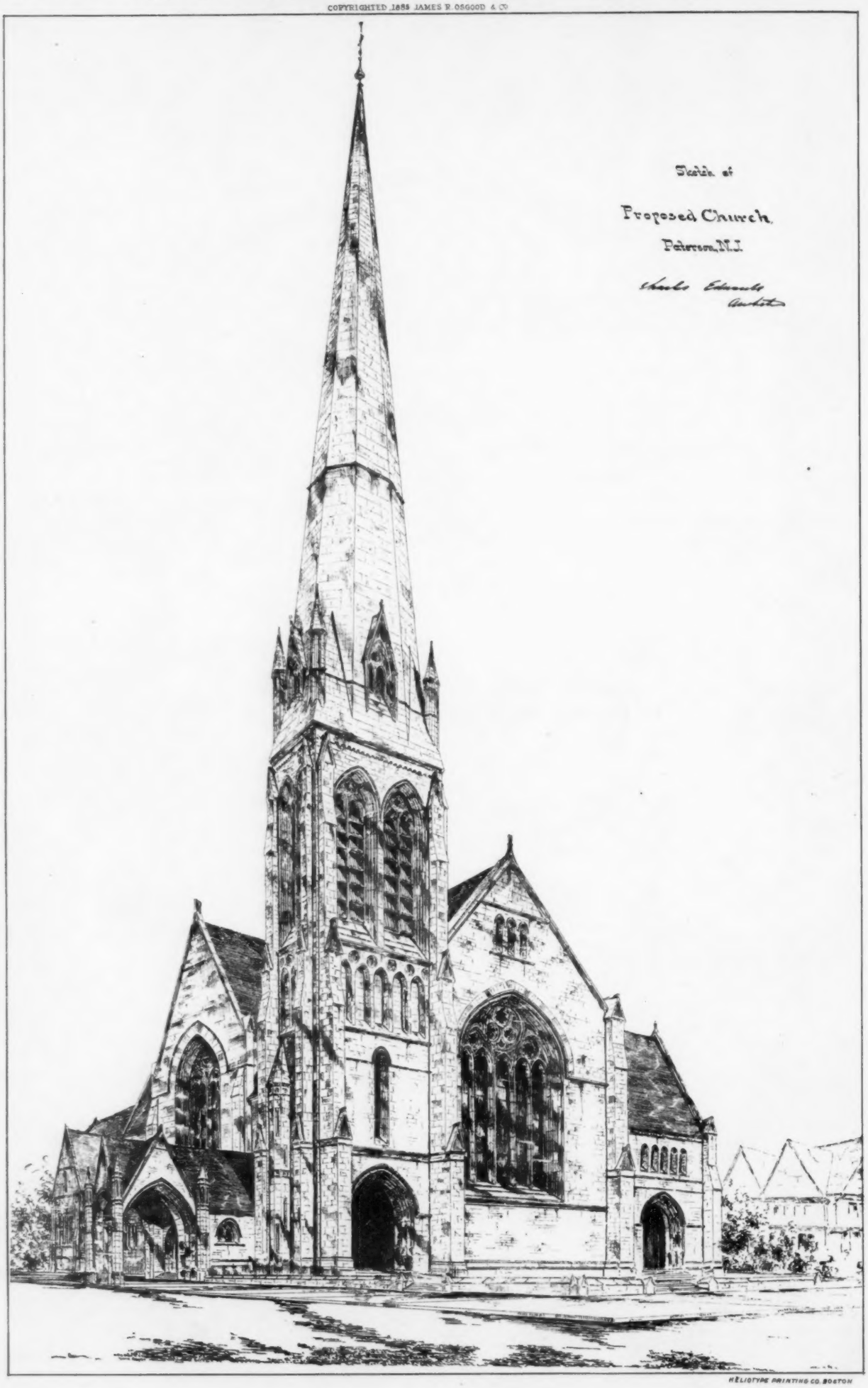

Design of

Proposed Church,

Paterson, N.J.

Charles Edwards
Architect

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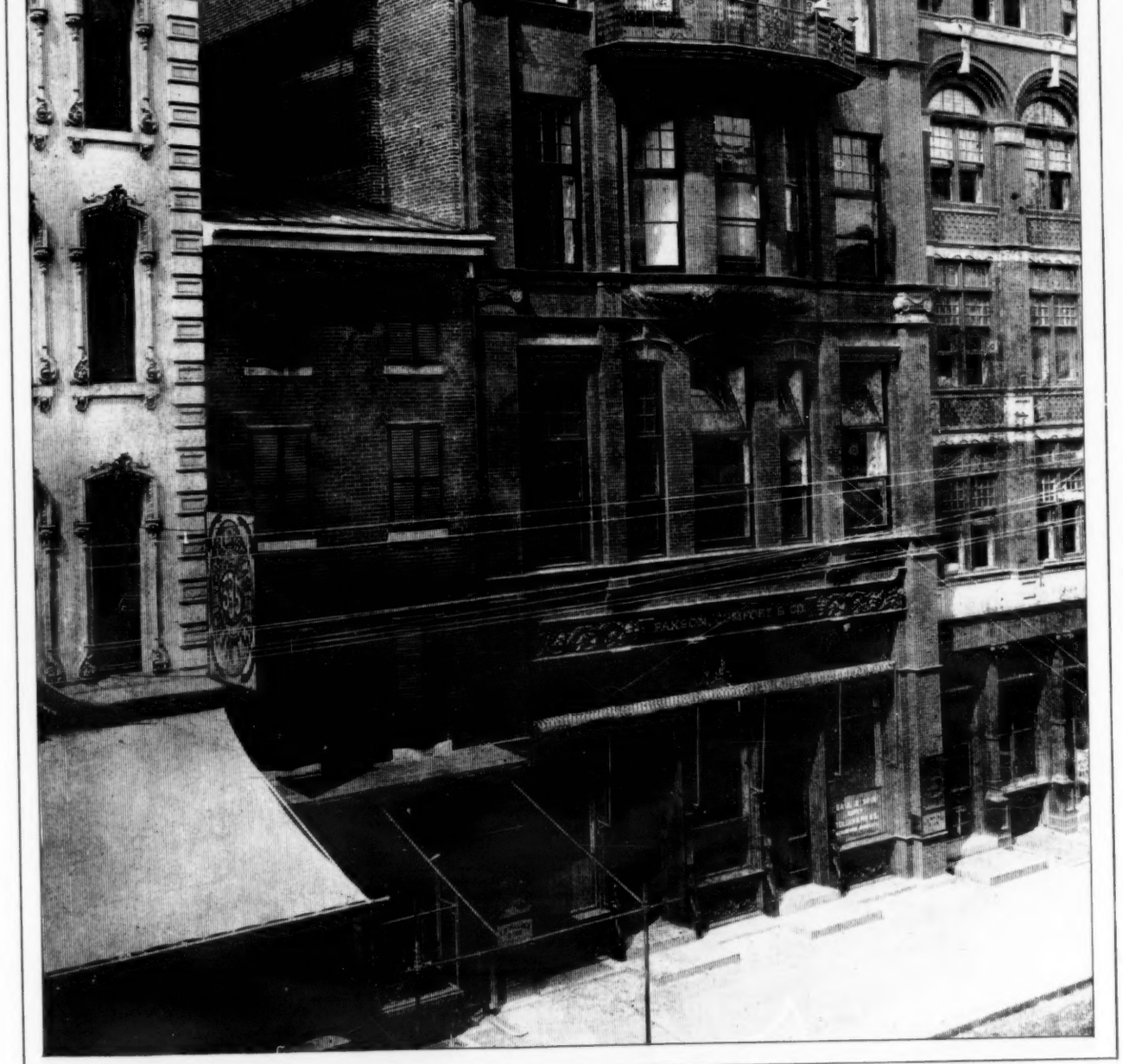

PAXON & COMFORT'S BUILDING, PHILADELPHIA, PA.
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House at Lobster Cove
Smith's Point.
End Gable.

House at Lobster Cove
Smith's Point. Manchester.
Mr. Arthur Little. Architect

The Fort House.

Distant Sketch
of the Fort House.

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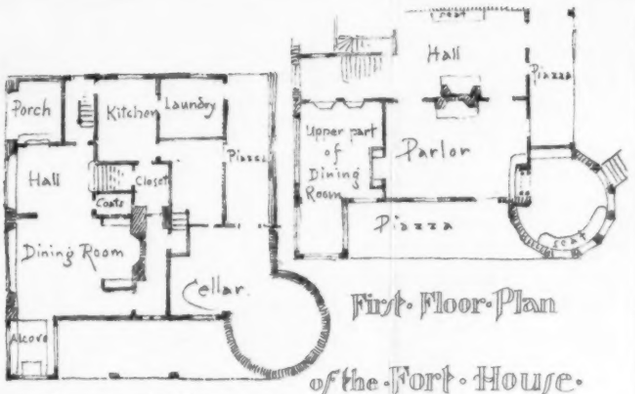

First Floor Plan of the Fort House.

Basement Plan

House of Mrs Paine Beverley Farms

Pencil Sketches in and around Manchester-by-the-Sea: Mass: by E. Eldon Deane.

Hall & fireplace the Fort House

Stables & the River Fort & Barn Houses Mr Arthur Little Archt.

New Post Office Salem

Messrs Peabody & Stearns Architects.

PRINTING CO. BOSTON

AMERICAN ARCHITECT AND BUILDING NEWS, JAN. 10 1885 No. 472

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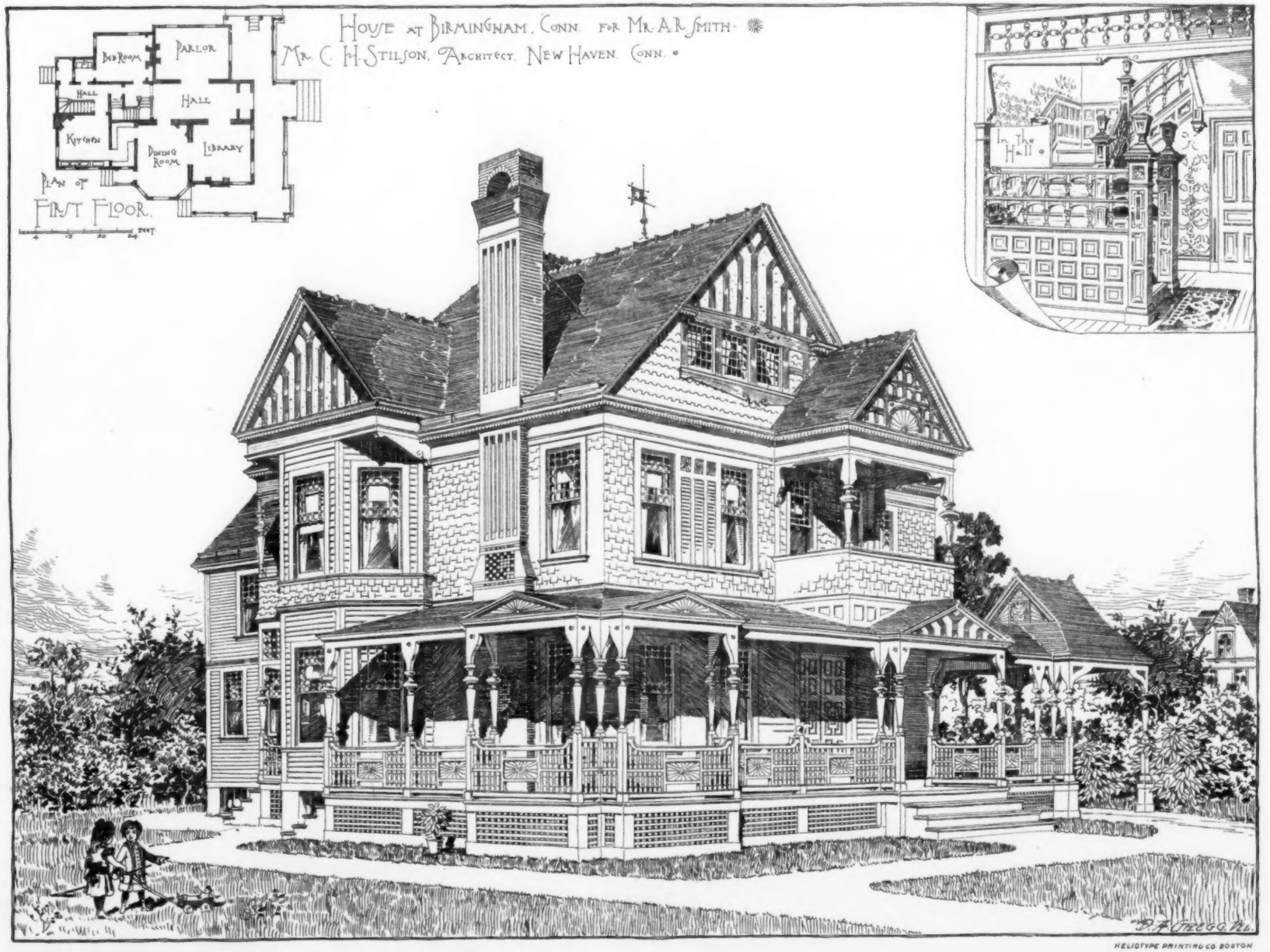
HOUSE AT BIRMINGHAM, CONN. FOR MR. A.R. SMITH.

MR. C. H. STILSON, ARCHITECT, NEW HAVEN, CONN.



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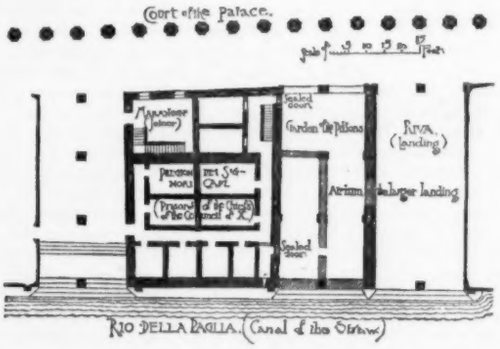
operation was finished, the blood of the victims flowed, and through the door, which is close by, and now walled up, the miserable remains were carried out.

When he has given this last information, the guide silently retires, in order not to disturb the incubus which he has succeeded in awakening within our souls. But we went down in imagination only, and will remain there alone to complete our investigations.

It should be time to make an end of the fables, and it would cost but little to confute them, if it were not for the closed doors, which attract even the attention of the visitor who has no prejudice whatever. When the men of the Revolution, having seized the Palace, entered the Pozzi, they must have stopped before these doors, and with excited fancies believed the cruel legends, which, not corresponding with the ideas of justice of the Venetian Republic, were afterwards rejected.

As we said, two doors at the extremities of a corridor are sealed with slabs of stone forced by iron wedges against the jambs. The frame-work of all the doors is of Istrian stone, but in the doors which are not sealed the lintel is cut at each end, so as to permit it to drop between the jambs, thus preventing them from falling together; while it simply rests upon the top of the sealed doors, thus indicating another construction. The outside of every lintel of the cells is engraved with a Roman number, while no such thing is found on the sealed doors. Looking at the brick wall we perceive that the sealed doors were cut after it was built, and any person having knowledge of construction will recognize the cutting of the old bricks, the small portions of the new brickwork used to fill up the break, and the smoothing of the new plaster.

Let us now go to the Canal della Paglia, to observe that portion of the façade of the palace, to which correspond the above-mentioned



prisons. They are comprised between the two large landings; one of the diamond-pointed stones, decorating the basement of the palace, is cut into a window, and it is through it that light is admitted into the corridor of the lower prison. In this same corridor are the sealed doors, which being cut in the wall on the side of the larger landing, once gave admission to its atrium. A most curious and puzzling thing! and in order to explain it we must study the plan of the place. A plan which is directly to the purpose is one drawn in the year 1580, when the new prisons were to be erected upon the opposite side of the canal, and kept in the Library Marciana. On this plan, the Pozzi are inscribed "Prisons of the Chiefs of the Council of Ten," and we see also there, that the two doors communicated with the atrium of the landing; in the drawing one-half of the atrium is closed, and divided by partitions on which is written "*Garden of the Prisons.*" The other half of the atrium is open, and inscribed "*Riva*" (landing).

The existence of the two doors in the wall separating the prisons from the atrium may now be explained. We know that the Garden was the mildest prison of the Ten; the name was perhaps given to it as a jest upon its mildness, being airy and light, while the cells were all in darkness; so we find on the 30th of April, 1599, one Ser Zuane Boldri imploring the chiefs of the Council to be returned to the "*Giardino*," from which he had been taken and put *al scuro* (in the dark). We may therefore believe that, when about 1550, this portion of the Palace was built, and with it the prisons of the Ten, which were afterwards named the Pozzi, it was found there was not space enough to put the prisoners while the cells were being aired, and that they stood in need of a commodious landing upon the canal. One-half of the large atrium, which is close by, was therefore closed, and through the old partition-wall the two doors were opened, one of which led to the "Riva," and the other one gave admission to a large room, which was named the "Garden." In the beginning of the seventeenth century, when the new prisons on the opposite side of the canal were built, the atrium being then reopened, the two doors were closed as we find them. The doors were made to meet the ordinary wants of a jail, and with the intention of giving an airing to the prisoners; both the art of opening and closing them afterwards when the new prisons were built, tells us of a human feeling which accompanied the inflexible justice of the Venetian Republic.

In order to ascertain the level of the lower prisons, I measured the height from the pavement of the corridor to the small aperture made in the diamond-pointed stone of the basement of the façade on the canal; and comparing this measure with that of the outside from the same window to the high-water mark, I found that the pavement is one metre and five centimetres above it.

Nicolini, the tragic writer, who, together with so many poets and historians of the beginning of the century, contributed to disseminate among the general public erroneous ideas concerning the Venetian Republic, which had fallen but a short time before, wrote regarding these prisons: —

> . . . . "The livid wave
> That lies languidly between the palace of evil omen and the prisons
> Sighs suspended over the miserable heads, and shuts out the echo,
> Which repeats only the sounds of sorrow."

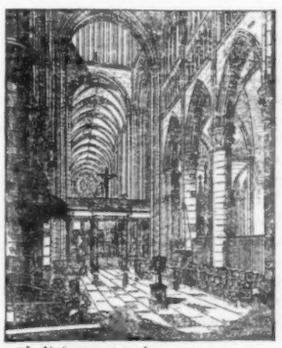
These writings will however retain a value for their poetical beauty, and remain as evidence of the current ideas of the writers, as Sterne called Locke's "*Essay upon the Human Understanding*" "a history book of what passes in a man's own mind." But if there is any one left who believes the prisons are under ground, or even on a level with the canal, he may convince himself they are on the same height as the pavements of the atriums, and therefore higher than most ground floors of buildings of the present day; yet see what absurdities have been current about them!

And fancy was not only at work about the closed doors, but as we said before, the cells acquired new importance through the names which were given them: it might not be superfluous to say that the Count of Carmagnola was shut up in the Forte, a prison which was on the sea side of the palace, over one hundred years before the prisons of the Ten were built, and that the Doge Faliero was still one century anterior to Carmagnola.

The step of the corridor, and the holes in the walls are traces of a railing to shut off the head of the corridor; in the small niche a lamp was placed, there were also many others for the purpose of lighting the prisons; and through the holes of the stone beyond the railing, the daily cleaning was accomplished. A lamp, a railing, and something else should not seem out of place in a prison.

GIACOMO BONI.

THE RIGHT OF SANITARY AUTHORITIES TO RETAIN BUILDING PLANS.


The Nave, Rouen Cathedral, France.

ONE of the most important points affecting the interests of the building trade and of building owners that have for a long time occupied the attention of a court of justice arose in the action of Gooding *vs.* the Local Board of Health for Ealing, tried a few days ago in the Queen's Bench Division, before Mr. Justice Mathew, without a jury. In April of the present year, the plaintiff in the action contemplated the erection of some shops, houses, and a lecture-hall in the Broadway, Ealing, and he accordingly sent plans of the proposed buildings to the defendants, and also gave notice to the defendants of his intention to erect the buildings. The notice was given on a printed form supplied by the defendants, at the bottom of which was a foot-note: "See Regulations over." The plaintiff signed the notice, and observed this foot-note, but he did not read the "Regulations" referred to by it. On the back of the notice was printed a "Regulation" in these words, "All plans deposited will be retained in the surveyor's office for record." The plaintiff had also signed similar notices before. The defendants disapproved of the plaintiff's plans, and he was informed by them of that fact; but he was not informed by them in what respect the plans had not conformed with the by-laws, and when he wrote to them asking for information on the subject, they refused to give any such information. The plaintiff then demanded a return of his plans, and as this was also refused, he brought an action for their detention, and the question arose at the time whether an Urban Sanitary Authority, acting under the Public Health Act, 1875 (38 and 39 Vict. c. 55), has power to retain plans, although they may have disapproved of the erection of the contemplated buildings. The sum to the paid to the architect was stated to be about £150; but this sum included his commission, and it did not appear what the cost of the plans alone would have been. It was contended on the plaintiff's behalf that there was nothing in the Act just mentioned which would give the defendants a right to retain the plans. The one hundred and fifty-seventh section of the Act empowers every urban sanitary authority to make by-laws respecting new buildings, and to provide for the observance of such by-laws by enacting therein such provisions as they may think necessary, as to, amongst other things, the deposit of plans and sections by persons intending to lay out streets, or to construct buildings; but this section, it was argued, gave no power to make a by-law which would deprive an intending builder of his plans altogether, and it was further urged that the "regulation" under which the defendants claimed the right to retain the plans was not contained in any by-law, and could not, therefore, have the force of a by-law. It was likewise contended that, although it might be reasonable that the

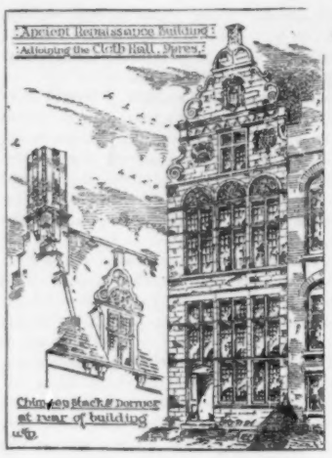
defendants would have power to retain the plans for purposes subservient to the Act, as, for instance, if they approved of them, to see that the work was carried out in accordance with them, it was not reasonable that they should retain them when they had disapproved of them.

Mr. Justice Mathews was, however, of opinion that the "regulation" at the back of the notice as to the retention of the plans, was sufficiently brought to the plaintiff's attention, and that the provision made by it was reasonable. Judgment was accordingly entered for the defendants with costs.

We are unable, whilst entertaining the fullest respect for the learned judge, to regard this decision as being otherwise than erroneous and eminently unsatisfactory. The plaintiff has, we believe, since the action was commenced, sent in other plans, which the defendants have approved of, and has constructed his buildings, so that it is possible that the case may not be carried to a higher court; but the question involved is, nevertheless, of such general interest and importance that we deem it desirable to direct special attention to it. If the decision of the learned judge in this case be correct, builders and building-owners in general may find themselves exposed to the infliction of a serious burden; for, what one sanitary authority may legally do under the statute referred to, all other sanitary authorities may likewise do.

We cannot but think, however, that the real issue in the case now under consideration was seriously obscured — if indeed it was not almost entirely lost sight of — in consequence of the introduction of questions of secondary importance, such as the bringing of the "regulation" to the attention of the plaintiff, and the reasonableness of the provision made by it. With regard to these points, the suspicion, we must confess, forces itself irresistibly upon us, that some confusion must have arisen both in the minds of the counsel and of the judge, between the case under discussion and certain cases which have been decided by the courts, from time to time, with reference to conditions printed at the foot or on the back of railway contract-notes and tickets. To us, although we express the opinion with all respect for the view adopted by the learned judge, these cases appear to have little or no bearing upon the present case, and the reasonableness of the regulation and the calling the plaintiff's attention to it to be quite beside the real issue. The real issue, and indeed the only issue properly involved in the case, appears to us to have been whether the "Regulation" printed on the back of the notice signed by the plaintiff, when he deposited his plans, was legally a by-law. In order that such a provision should amount to a by-law, it would be necessary, we apprehend, that the terms of the Public Health Act, 1875, should have been complied with. On referring to the one hundred and fifty-seventh section of that Act, which has been already quoted, it will be found that the provisions which urban sanitary authorities are empowered to make for the observance of the by-laws which the same section authorizes them to make, are to be enacted "therein"; that is to say, they must be enacted in the by-laws themselves. But the "regulation" in question was not contained in any by-law, and was not even referred to by any by-law; it was simply printed at the back of the form of notice of his intention to build, which the plaintiff was called upon to fill up and to sign upon depositing his plans; and although the foot-note on the face of this form called attention to the "regulation" at the back, it surely could not be correctly contended that the "regulation" would be binding upon the plaintiff, however pointedly his attention may have been directed to it, or however reasonable it might appear in its terms to be, if it was beyond the power of the authority to make such a "regulation," or if the statutory requirements respecting it had not been complied with. The one hundred and eighty-fifth section of the Act provides, moreover, that by-laws made by a local authority under the powers conferred by the Act shall not take effect unless and until they have been submitted to and confirmed by the local Government Board, an enactment which had clearly not been complied with as regarded the "regulation" in question, inasmuch as it was not contained in any of the by-laws made by the defendants, and which appears to us to make strongly against the validity of the "regulation," and against its being binding on the plaintiff. Nor can we quit our notice of this case without referring to the high-handed course adopted by the defendants in refusing to afford the plaintiff any information as to the grounds upon which his plans had been disapproved. It is obvious that such a course may involve great hardship and injustice; but we believe it to be also wholly opposed to the spirit and intention, if not to the express letter, of the statute above-mentioned. The one hundred and fifty-eighth section of the Act declares that where a notice, plan, or description of any work is required by any by-law made by an urban sanitary authority to be laid before that authority, the authority shall, within one month after the same has been delivered or sent to their surveyor or clerk, signify in writing their approval or disapproval of the intended work to the person proposing to execute the same. It is, we believe, the law that a mere disapproval is of no avail if the person depositing plans, or the like, can show that no by-law has been disobeyed; but it is obvious that if a bald notice of mere disapproval is to be held a sufficient compliance with the terms of the statute in the section just quoted, no person could have a proper opportunity, either of correcting any defect, omission, or error that might have been made in the plans or other documents deposited, or of showing that no by-law had, in fact, been disobeyed. — *Building News.*

HEIDELBERG CASTLE.



ALL who have heard of the Castle of Heidelberg, or heard of its beauty and deep historic interest, will learn with regret that imminent danger threatens this ruin. In view of the present danger one almost forgets the days of 1622, when the Thirty Years' War broke relentlessly upon this citadel of the Palatinate. The destruction then, as well as that which followed in 1689 and 1693, seem but the precursors of what is now coming. If the destruction at that time had been one of the inevitable attendants upon honorable warfare our regret would be less, but it is impossible, even at this remote day, to pardon the treachery which, by a secret breach of promise, succeeded in blowing up the towers of the building, although, happily, failing in several cases. Moreover, not content with the sacking and systematic firing of the remainder of the palace, there ensued a brutal massacre of the panic-stricken inhabitants, suddenly aroused by the sight of the flames bursting out of the windows of the castle where long had dwelt their princes. It seems almost incredible that to celebrate this cowardly but terrible destruction, the conqueror Louis XIV, should have caused a brilliant Te Deum to be sung, and several coins to be struck, on one of which is to be seen his own portrait, with the legend "*Ludovicus Magnus Rex Christianissimus*," and a representation of Heidelberg burning, accompanied by the exulting phrase, *Heidelberga deleta*. In the following century the adverse elements brought still further destruction to the castle. "On St. John's day, June 24, 1764," reports the journal of an old citizen of Heidelberg, "at 3 o'clock in the morning, the castle was struck by lightning, and so great a conflagration ensued that upon the same day, which was Sunday, the great octagonal tower and the wing toward town, even down to the church were on fire. All the woodwork above the Ritter Saal was soon reduced to ashes; from the flames there was no deliverance. On Monday the castle was still burning, several persons were injured, and the citizens had to be on duty day and night. On Tuesday, the fire somewhat abated, and on Wednesday, the peasants could be sent in to clean out the ruins." After this disastrous storm the hope was given up which had been entertained by Carl Theodor of making the castle once more the seat of Government. Vegetables were planted, and grain was sown in parts of the grounds, many statues were removed from their nooks to the new pleasure gardens laid out at Schwetzingen, while the desolate ruin itself was given up for more than half a century to be a common quarry.

But notwithstanding the most strenuous efforts to prevent it, a destroyer more insiduous than any others has attacked the ruin in late years. On building the railroad which opens up the valley of the Neckar, the projectors of the road estimated that, instead of carrying it along the river bank, it would be cheaper to conduct the track through the mountain on which stands the castle. Hence that disastrous tunnelling was begun, which remonstrances on the part of all Heidelberg could not prevent. The use of powder in excavating this formidable tunnel shook with tremendous force the very rocks on which had rested, hitherto securely, the great building. Had this disturbance occurred, once for all, the danger might have been slight. But it was only the beginning of a succession of earthquakes produced by the ponderous freight trains which now continuously rush through the dark tunnel, making the hoary structure quiver afresh at every ominous warning. How great the damage already done is apparent to every one. In the massive walls of that part of the castle built by Frederick V for his bride, Elizabeth of England, there may now be seen a yawning cavity so closely resembling an arch that a casual glance would lead one to suppose that the architecture here at least is sound. But more careful observation and perchance a falling block from the region of the supposed keystone, will convince one that this gap is but a terrible mockery of the true arch, and tells of the ruthless destruction caused by the railroad. The extent of the mischief done will, however, only be discovered by those privileged to be escorted through the ruins. In the building termed the Enlisch Bau the ruin going on is most apparent. Here, the massive and beautifully-cut stones are slowly but too surely breaking away. Feeble iron clamps inserted, and themselves now yielding, are all that hold these indispensable facings to the coarse inner masonry. After every frost, and even after every gentle snowfall, there drop from the façade of the Otto Heinrich's Bau, those beautifully-carved and deftly-shapen bits of sculpture which clothe this structure with its charms. These fragments strewing the ground each winter and spring have always been carefully collected and preserved. But still more imminent, although less evident to the unpractised eye, is the danger

threatening the old clock-tower. In this apparently so stable building, architects tell us that the great central pillar supporting the whole structure is already tottering, and that we need not be surprised at any moment to see the stately tower come crashing to the ground.

Is this destruction to be allowed its own free play? Are these majestic ruins to be inevitably swept from their sunny heights? are questions which come with great force to every one who has ever heard of Heidelberg Castle. That faithful band, the Schlossverein, led by the architect Seitz, has already succeeded in rousing the tardy Chambers of Baden, and the Grand Duke, who has long seconded the wishes of the citizens of Heidelberg, is now aided by his people. In March, 1883, the Chambers appointed two working bodies, to be subject to the Department of Finance. One of these, termed the Bau-bureau des Heidelberger Schlosses, is the active member of this trio, and in April, 1883, took its seat in the castle itself, occupying those parts which served originally as servants' and housekeeping quarters, and have latterly been rented to English tourists. The task at present set before these workers — composed of two skilled architects, an engineer, a sculptor, and a geologist, with their assistants — is simply to make a thorough diagnosis of the malady from which the old castle is suffering. The remedy must of necessity be a matter of the future. Exact drawings of every part, comprising horizontal as well as perpendicular projections, are being made in the proportion of 1:10. In these the places ruined are marked by blue shading, and the stonecutter's marks, as well as the dimensions of the different blocks, are all noted. Especially important stones or parts of walls are, besides, marked with numbers, and then particularly described, while all architectural or sculptural ornament is represented in its actual size, and accompanied by an accurate account of the nature of the stone, and of its present condition. In addition to such detailed plans general views are also made, and in a separate paper are summed up all the important technical as well as historical points discovered in the course of investigation. The work accomplished by these agencies during one year is astonishing, and but too well confirms the fear of danger. In January last, 66,000 marks were unanimously voted by the Chambers of Baden toward covering the expense of these investigations, any surplus to be applied to the foundations.

The universal interest felt in this rare creation, raises its safety to the high level of an international cause. To a wider public, the Schlossverein (hitherto admitting only residents of Heidelberg) has therefore now thrown open its doors. The castle asks for only one-twelfth of the sum which was raised for the completion of the Cologne Cathedral, and as the necessary funds for that great monument were brought together by thousands of small subscriptions, so the Schlossverein proposes, by greatly increasing its membership, to aid in the salvation of the castle. An annual subscription of 3 marks (75 cents) constitute an ordinary member, and the payment of 50 marks ($12.50) a life member. To all who thus become members of the society it sends an annual report of the transactions, thereby keeping up a lively interest in the work. In Heidelberg, the banking-house of Kistner & Co. offered their services, and in New York, that of Knauth, Nachod & Kuhne. — *Lucy M. Mitchell in the New York Times.*

COMPUTING AN ARCHITECT'S FEE.

WATERTOWN, N. Y, December 23, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Should the cost of the architects' plans be estimated in making up the cost of a building, upon which he would get a percentage for his plans, when full professional services were rendered? By answering the above, you will oblige J. W. GRIFFIN.

[THE architects' percentage is reckoned on the cost, exclusive of his own fee. — EDS. AMERICAN ARCHITECT.]

PROPOSED BILL DEFINING THE DUTIES OF THE SUPERVISING ARCHITECT.

ST. LOUIS, December 29, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — The proceedings of Congress have so rarely a distinctly professional interest for architects that the measure lately proposed to place American architects on the same footing in respect to Government buildings which their brethren enjoy in France, will perhaps take them so by surprise that they may fail to give it the attention it deserves. This is substantially the effect of the bill which the Hon. S. M. Stockslager, of Indiana, presented before the House of Representatives, on the 4th inst., and which the *American Architect* has printed in full in its last issue.

The author of this bill has laid it before the architects of the country, doubtless, to invite such comment or suggestion of amendment as may conduce to its successful operation in case it should become a law. The bill seems practical as a whole, and generally well matured. Careful reading suggests, here and there, a change which might perhaps be advantageous.

For example: while the Supervising Architect is a subordinate of the Treasury Department, he is to be appointed, not by the head of that department, but by the President, subject to the consent of the Senate. Again, the Supervising Architect must have a chief assistant, but cannot select him; this must be done by the Secretary of the Treasury. Doubtless, in five cases out of six, these appointments would in fact be made by their respective superiors, the President consulting the Secretary of the Treasury in naming the Supervising Architect, and the Secretary in turn consulting the Architect as to his chief assistant. By a slight change in the bill, this very natural and rather necessary mode of appointment would become the legal one.

Then, since the office of Supervising Architect has no political bearings (or should have none), why require the consent of the Senate to his appointment? Give the Secretary of the Treasury full power to select the Supervising Architect, and make him solely responsible; then let the Supervising Architect alone appoint all his subordinates, and hold him alone responsible. That is, simply invest Government officials with the same powers and responsibilities which obtain in business life, and which are found necessary everywhere.

If the appointment of Supervising Architect could be made for life, dependent only on competency and good behavior, and subject to removal only for sufficient cause, on conviction before a suitable court, it would be likely greatly to elevate the range of ability available for this office. Such an honorable and secure position, even at the moderate salary of five thousand dollars a year, would have its attraction for not a few able and experienced men; but they would most certainly decline to give up their private practice for the rewards of a political office lasting but four years, even at a considerably larger compensation. Need it be remarked that this bill should be so framed as to place at the service of the Government, for its Supervising Architect, the best professional talent and highest personal integrity in the country?

Then is it not very greatly to the interest of the Government that the incumbency of this office should be as permanent as it can possibly be, that it may constantly receive the accumulating benefit which every year of additional experience will give its architect? Men do not hasten to discharge their book-keepers, their foremen, their physicians, as soon as their experience begins to avail them. Why change to a new architect every four years, particularly when the Supervising Architect is no longer to do all the designing of Government work, but is to be chiefly engaged in supervising, as his title imports?

Turning to Section 4, we find that the plans received in competition for public buildings are to be submitted to a Board consisting of the Postmaster-General, Attorney-General, Chief Engineer of the Army, Supervising Architect, and an outside architect selected by the President. The Secretary of the Treasury is not included in this Board, although the buildings proposed are to be erected under his direction, and his experience or that to be found in his department would make his judgment valuable. Undoubtedly there would be frequent need to consult him on occasion of each competition, and were his name to be substituted for that of the Attorney-General, would it not be an improvement?

The *American Architect* has already pointed out the unreasonableness of the sliding scale of compensation proposed in Section 6, which reduces the percentage in proportion as the cost of the building increases. The same section proposes an award of six prizes to unsuccessful designs "amounting in the aggregate to not more than *one per centum* down to *one-half of one per centum*, according to another sliding scale. By this scale the average reward to an unsuccessful competitor for a carefully-prepared design, completely worked out in every detail, so that its author can guarantee the cost to fall within the limit assigned, will be from *one-sixth* to *one-twelfth* of one per centum. Is it not broadly humorous to designate such a reward "*a prize?*" And what class of architects is such liberality in the way of temptations likely to call into activity?

It is not necessary that there should be six prizes beside the first choice. Four would be enough, or even three; but the amount offered for a prize should be sufficient for its purpose, or none should be offered at all. Three to four per centum on the cost of the building, without any sliding scale, would be as little as could answer the purpose of a prize fund for the designs here regarded.

Section 7 provides for advertising a competition for seven weeks beforehand. Were the building in question a grammar-school, or a block of stores, or a dwelling, and were the best architects likely to be much at leisure when the advertisement was made, and chanced to see the first copy, and were the prizes offered large enough to stimulate to enthusiastic effort, seven weeks might perchance be enough for the well-matured designs required. But Government work is apt to be of a complicated and unusual character; the best architects are most apt to be the busiest ones, too busy, often, to see the advertisement till it has run some weeks; the modesty of the prizes has already been noted.

Probably the result would be that the day of decision would be postponed after its first announcement, and even then every one would perceive that much more time should be allowed. This would seem to be a matter which might best be left within the discretion of the Board which directs the competition in other respects. If there be a class of work in this country where every consideration would seem to urge the most ample allowance of time for its maturest development while in the designer's hands, it should be the costly structures which the national Government erects as visible monuments of its greatness and majesty. Six months would be little enough time in a busy season.

Again, this bill requires the Board to abandon the plan selected in

a successful competition if the author shall fail to furnish the working-drawings in full by the time appointed. Now the architect may die, or he may be sick, or for some other reason unable to deliver the working-drawings as required. Yet his design may remain much the best of all submitted, and the Board might be able to procure the working-drawing from some other source, if permitted. This would appear to be preferable to requiring the abandonment of a fine design, simply because its author could not himself supply the working-drawings. Probably the Supervising Architect could in his own department find draughtsmen able to elaborate working details from a selected design of the kind which these competitions are expected to elicit, in case of emergency.

When advertising for bids, it might be well to submit, with the plans and specifications, a blank form of contract, so that bidders would be fully informed as to what will be required of them if successful.

Section 21 provides for the punishment of the Supervising Architect, on conviction of malfeasance in office, by fine, and, at the discretion of the court, by imprisonment for not more than two years. In the latter case it would seem very desirable that the punishment should involve his dismissal from office.

Very respectfully, C. E. Illsley.

SPLINES.

New York, N. Y., December 29, 1884.

To the Editors of the American Architect: —

Dear Sirs, — Will you kindly inform me on the following points. In your issue of October 4, you describe the Lawrence building, as floored with four-inch *splined* spruce; what is the special meaning of the word? In what width was this plank used?

I have seen in your paper, mention of a pamphlet or article by Mr. T. M. Clark, on school-house construction, included, I think, in some Government report. Exactly what report should one apply for, in order to obtain it. Very truly yours,

E. C. Reynolds.

[1. Spruce planks to be splined are grooved on both edges, and a hard-wood slip inserted when the planks are put together. This is done instead of tonguing and grooving, to avoid the waste of material involved in forming a tongue on a thick piece. The planks in the Lawrence building run from six to nine inches wide.

2. The pamphlet on school-house construction is known as Circular No. 4, 1880, on "Rural School Architecture," and can be had, if not out of print, by addressing the Bureau of Education, Washington, D. C. — Eds. American Architect.]

MISCELLANEOUS QUESTIONS.

Hartford, Conn., January 3, 1885.

To the Editors of the American Architect: —

Dear Sirs, — What advantages are gained by cambering up the iron tie-rods of long trusses, instead of keeping them horizontal?

2. Does dry quicksand have any deleterious effect on lime, when mixed for building mortar?

3. Which is preferable, river or sea sand, when both are of equal sharpness?

4. What is the best filling for air-tight spaces around an ice-box, charcoal, cement, or air? L. M. N.

[1. No advantage is gained except the extra height under the tie-rod.

2. Quicksand would be just like any other sand for mortar, except that it might be clayey, and would often be too fine for making good mortar.

3. River sand is preferable, because it is free from salt.

4. The best filling is a spongy substance, like hair, felt, or cotton Where this is used, the real non-conductor is the air entangled in the fibres; but as the air is thus prevented from circulating, and carrying heat to the ice by convection from the outside, the fibrous mass is a more efficient non-conductor than the air without it. If a solid substance is desirable, plaster-of-Paris is much the best. — Eds. American Architect.]

NOTES AND CLIPPINGS.

A Long Wire-Rope.—At Cardiff, in Wales, has been manufactured a wire-rope, 2,300 fathoms or 2 miles and 108 yards, long. The weight is 21 1-2 tons. Nearly 100,000 faihoms of wire were consumed in its production. The rope is to be used in working trains in a terminal station at Glasgow.

The Value of Real Estate in Rome.—The advance of real estate in Rome is no less remarkable than its enhancement in other capitals and great cities. The Constanzi Hotel and grounds, purchased a few years ago for $60,000, are to be sold to a body of Jesuits for $150,000. It adjoins the Sallust House, which latter was bought fifteen years ago by a German named Spithover. He gave, in instalments, $3,000 for the property. At the present time it is estimated at $350,000.

Planting Catalpa Trees on the Prairies. — The catalpa trees which were set out by the Evansville & Terre Haute Railroad Company two years ago are now about three inches in diameter, and in three years more will be large enough for cross-ties. Some five years ago a Lawrence (Mass.) gentleman planted a few catalpa seeds, and now has several beautiful trees fully eight feet tall, which this year blossomed for the first time. Catalpas have recently been set out in the Boston Public Garden, and large numbers of them are being raised in Iowa, the idea being to use the wood for fence-rails. These trees grow so rapidly that the matter of raising them from the seed or twig is well worthy the attention of all interested in forestry.

The Public Baths of Vienna. — The public baths of Vienna are said to be the finest in the world. The building is situated in the heart of the city, and encloses a basin 156 feet in width by 578 feet in length, and varying in depth to 12 feet. The enormous quantity of water contained in this basin is renewed three times a day. The whole establishment has accommodation for fifteen hundred persons, and is open from May 1 to October 31, and from five in the morning until dusk. There is also a bath restricted to ladies, open from nine in the morning until one; and the Vienna ladies are especially good swimmers.—*Exchange.*

The Effect of Gas and Electricity on the Purity of the Atmosphere. — At the Theatre Royal, Munich, tests have been made to determine the elevation of temperature and the amount of carbonic acid under illumination of the house by gas and by electricity. The thermometer was observed every ten minutes during the performance, when there was, on an average, an attendance of between five hundred and six hundred persons. The readings of the thermometer indicated a much less increase of temperature for the electric than for gas-light. Further, it was proved that while the electric-light did not render ventilation unnecessary, a less active renewal of the air within the building was required than when gas-light was employed.

South Kensington Museum. — A parliamentary paper has been issued, stating that it is estimated that the various gifts and bequests to the South Kensington Museum would, if sold at the time they were received, have brought about £1,000,000. From 1865 to 1882–3 inclusive, the amount expended in the purchase of objects of art (originals and reproductions) available both for the central museum and for circulation to the provinces, has been £302,148; that for purchases for the National Art Library has been £52,665. The value of the bequests thus far exceeds the sum expended out of the annual votes of the department. Since the museum was opened, in 1857, up to the end of 1883, 22,675,912 persons had visited it. — *Exchange.*

Mechanics' Lien—Lightning-Rods. — The Supreme Court of Iowa has decided, in Harris *vs.* Schultz, that a mechanics' lien may be filed against a building for the lightning-rods put on it. Judge Beck, in the opinion, said: "These rods are not different in character or purpose from metallic gutters, or spouting, or iron anchors. All are designed to secure buildings against the elements and forces of nature. Lightning-rods are for protection against electricity, gutters and spouting for protection against rain, and anchors to give security against wind. It cannot be claimed that gutters and spouting and anchors are not a part of the building; nor can such a claim be set up against lightning-rods. They clearly become essential parts of the building to which they are attached. The labor and materials used in their construction are done and furnished for the building in contemplation of the statue, for which a lien will attach." — *Metal-Worker.*

Public Buildings.—During the last year work has been in progress on forty-two new buildings, under the direction of the Supervising Architect, of which number sixteen have been begun, five completed, and two others practically completed. The expenditures during the year on all new buildings, including sites, have amounted to $2,772,413.58; for repairs and preservation of public buildings, $164,102.32; for heating, hoisting and ventilating apparatus, and repairs to same, $135,000; for vaults, safes and locks, $80,362; and for storage of silver dollars, $85.402.32. The Supervising Architect, in his annual report, refers to three conditions which, under provisions of existing law, operate to the disadvantage of the Government, viz.: 1. The limit of cost of public buildings appears in many cases to have been fixed without sufficient regard to the needs of the public service in cities where the buildings are to be constructed. 2. The appropriations made from time to time within the limits of cost are often inadequate for the proper prosecution of the work after its beginning. 3. Under existing law, no contract can be made binding the Government to an expenditure in excess of an existing appropriation. The remedies suggested by the Supervising Architect commend themselves to my judgment.—*Annual Report of the Secretary of the Treasury.*

The Change in the Structure of Iron. —For fourteen years State Geologist Collett has been experimenting upon a theory that the best of iron, when subjected to continuous strain, would undergo changes in its structure which would, after a time, render its use dangerous, and that these structural changes were the explanation of many otherwise inexplicable accidents, particularly to railway bridges. He has lately undertaken a systematic investigation, which has resulted in a confirmation of his theory. For experiment he took from the Wabash dam, at Delphi, a number of bolts and spikes, which were, when the dam was constructed, of the best quality of malleable bar-iron, as is shown by the battering of the head when they were put into the structure. Of these bolts and spikes, he found that seventy per cent of the whole number were as weak as cast-iron, while ninety per cent of those which were near the bottom of the dam were worthless; yet of those which were rotten, the tips where inserted in immovable rocks were fibrous and strong. When broken they showed polished ends to the connecting fibres, indicating that the continued vibrations of many years had polished and rounded the points of fibrous structure. A similar effect is found in "the partings" or "horsebacks" in coal-mines, which become polished and striated by the continuous quiver and motion of the crust of the earth. Dr. Collett says that all car-axles, after a reasonable run, become crystallized two-thirds of the length from the hub and one-third from the outside extremity, rendering them worthless. On one Indiana railroad bridge he found that the bottom parts of the vertical strain-pieces were crystallized for from two to four feet in length, and, as a precaution against what would inevitably have caused a great catastrophe, they were replaced. The matter is one of great interest to railways, and the specimens which Dr. Collett has collected in his experiments are to be sent to the Stevens Institute of Technology, where an investigation of the subject has been in progress for several years, by a scientist connected with the Institute.—*Exchange.*

GELATINE EDITION.

During the year 1885 a series of Gelatine Prints, (Heliotypes) photographed from the natural object, will be published in the AMERICAN ARCHITECT AND BUILDING NEWS.

These gelatine prints will be issued once a month to those subscribers only who will pay a dollar extra for the twelve prints.

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IMPORTANT NOTICES.

IT WILL greatly simplify our book-keeping and prevent future complaint, if those of our present subscribers who (having already paid to various dates of 1885) wish to receive the gelatine plates will make their remittances cover the *entire* year to January 1, 1886, by remitting at the rate of fifty cents for each remaining month, in addition to the dollar for the gelatine prints.

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ADVERTISERS, whose contracts run through the entire year, receiving the *American Architect* free can secure the gelatine plates by remitting $1.00 for the entire year.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

309,603. Stone-Dressing Machine.—Thomas H. Cook, Owego, N. Y.

309,612. Cement Composition for Moulding Brick, etc.—Richard B. Eason and John J. McGilvey, New York, N. Y.

309,619. Fire-Escape.—Tobias Hamilton, Centrefield, O.

309,625. Steam-Heating Apparatus.—Peter H. Inman, Highland Park, Ill.

309,631. Knob Attachment.—Charles F. Langford, Brooklyn, N. Y.

309,633. Door.—Frederick J. Lee, Oswego, Kans.

309,636. Window.—Eugene D. Mann, New York, N. Y.

309,646. Saw.—Jasper L. Purple, Owego, N. Y.

309,696. Device for Cleaning Street Sewer-Pipes.—Thomas Dark, Buffalo, N. Y.

309,728. Regulator of Temperature of Apartments.—Joseph Morwitz, Philadelphia, Pa.

309,755. Die-Stock.—Bruno Wesselman, Hamburg, Germany.

309,757. Elevator.—James Berry, Buffalo, N.Y.

309,763. Saw-Filing Machine.—David Chambers, Hull, Quebec.

309,771. Evaporator for Hot-Air Registers.—Charles T. Davis, Baltimore, Md.

309,799. Blower and Heat-Regulator.—Niels Poulson, Brooklyn, N. Y.

309,811. Radiator.—Thos. H. Williams and Samuel D. Tompkins, Jersey City, N. J., and John N. Matlock, Brooklyn, N. J.

309,813. Shutter-Fastener.—William H. Bothwell, Philadelphia, Pa.

309,819. Wash-Basin and Bath-Tub.—Charles Colahan, Cleveland, O.

309,822. Combined Lock and Latch.—Ransom D. Crane, Winchendon, Mass.

309,827. Sliding Door.—Edward Drake, Prattsburg, N. Y.

309,836. Tile-Kiln.—Lindsey C. Farnam, Niantic, Ill.

309,846. Paint.—Jonathan H. Greene, Philadelphia, Pa.

309,856. Hanger for a Pair of Doors.—Elmer N. Hutchins, Lawrence, Mass.

309,857. Window-Shade.—Walter F. Morgan and George Kauffmann, Leavenworth, Kans.

309,868. Auger.—Holcomb Olson, Olesburg, Kans.

309,887. Ratchet-Brace.—Amos Shepard, Plantsville, Conn.

309,902. Bit-Stock.—John Watson, Buffalo, N. Y.

309,929. Fire-Escape.—John E. Clokey, Washington, D. C.

309,932. Door-Check.—Martin H. Crane, Cincinnati, O.

309,940. Fire-Proof Compound and Sheets made Thereof.—Nathaniel C. Fowler, Boston, Mass.

309,943. Heat-Insulating Compound.—Carl Grünzweig and Paul Hartman, Ludwigshafen, Ger.

309,963. Lock.—Ernest Korbel and Louis Kurz, New York, N. Y.

309,973. File.—Ludwig Müller, Dresden, Saxony, Germany.

309,975. Cement-Pipe Connection.—John V. Nicolai, Cincinnati, O.

309,986. Tile-Kiln.—John W. Smith, Kilmore, Ind.

309,988. Fastening for Meeting-Rails of Sashes.—Thos. S. Smith, New Haven, Conn.

309,989. Ratchet-Drill.—Thomas P. Somes, Revere, Mass.

309,993-994. Self-Closing Hatchway.—Richard D. Thackston, St. Louis, Mo.

SUMMARY OF THE WEEK.

Baltimore.

Building Permits. — Since our last report but two permits have been granted, which are as follows: —

Henry Brinkmeyer, three-st'y brick building, e s Eden St., bet. Baltimore and Hampstead Sts.

J. H. Frisby, 4 three-st'y brick buildings (square), com. n w cor. Townsend St. and Morton Alley.

The whole number of permits granted in the year 1884, was 3,208.

Boston.

School-Houses. — Following are the new school-buildings in process of construction, with the amount of appropriation for each, all of which are in various stages of progress: —

Grammar school-house, Bennett district; cost, $23,000.

Grammar school-house, Huntington Ave.; cost, $101,000.

Grammar school-house, Hammond St.; cost, $85,000.

Grammar school-house, Minot district; cost, $40,000.

Primary school-house, Blossom St.; cost, $76,769.35.

Primary school-house, Brighton district; cost, $7,600.

Primary school-house, Harrison Ave.; cost, $50,000.

Primary school-house, Parker St.; cost, $35,000.

Primary school-house, Prescott St.; cost, $8,000.

The above-mentioned buildings are well advanced toward completion.

Brooklyn.

Building Permits. — *Dikeman St.*, s s, 275′ e Van Brunt St., three-st'y frame (brick-filled) double tenement-house, tin roof; cost, $3,300; owner, Rosa McLaughlin, 73 Dikeman St.; architect, F. D. Van Pelt.

Reid Ave., n e cor. Hancock St., three-st'y brown-stone store and tenement, tin roof; cost, $12,000; owner, Chas. H. Althaus, 178 Second Ave., New York; architect, Carl F. Eisehach; builder, not selected.

Wyckoff St., n s, 50′ w Nevins St., four-st'y brick tenement, tin roof; cost, $8,000; owner, Mrs. B. McGuire, on premises; architect, R. Dixon; builder, Owen Nolan.

York St., s w cor. Hudson Ave., two-st'y brick store and dwell., tin roof; cost, $4,900; owner, Mrs. Mary T. Donohue, 186 Herkimer St.; builders, Edward T. Rutan and James Sheriden.

Steuben St., e s, 400′ n Park Ave., three-st'y brick tenement, tin roof; cost, $6,000; owner, Mrs. Coyle, 25 Schenck St.; architect, E. F. Gaylor; mason, Jas. Rooney.

North Elliott Pl., e s, 279′ s Park Ave., 11 three-st'y brick tenements, tin roofs; cost, each, $6,200; owner, Bryant McAleveney, 992 Bergen St.; architect, F. D. Van Pelt.

Hudson Ave., w s, 50′ 8″ s Concord St., four-st'y frame (brick-filled) tenement, tin roof; cost, abt. $6,000; owner, Jas. L. Dougherty, 625 Fulton St.; architect, Chas. E. Hebbard.

Woodbine St., s s, 275′ e Broadway, two-st'y frame (brick-filled) dwell., tin roof; cost, $3,000; owner, J. Esquirol, Woodbine St.; architect, Th. Engelhardt.

Marcy Ave., e s, 20′ s Rutledge St., 3 four-st'y brick tenements, tin roofs, iron cornices; cost, each, $8,500; owner and builder, Henry Grasman, 142 Marcy Ave.; architect, Frank Holmberg.

Forest St., s w cor. Evergreen Ave., five-st'y brick brewery, slate and tin roof; cost, $14,000; owner, S. Liebmann's Sons, Forest St., cor. Bremen St.; architect; Th. Engelhardt; builder, U. Maurer.

Melrose St., No. 24, s s, 250′ e Evergreen Ave., three-st'y frame tenement, tin roof; cost, $3,600; owner and builder, Chas. Gossman, 36 Ellery St.; architect, E. Schrempf.

Conselyea St., No. 179, n s, 200′ e Graham Ave., three-st'y tenement, tin roof; cost, $6,800; owner, D. Weber, 156 Grand St.; architect, A. Herbert.

Broadway, n s, 60′ w Van Buren St., three-st'y frame store and dwell., tin roof; cost, $3,500; owner, A. C. Beardsley, No. 1159 Broadway; architect, F. Halmberg; builder, not selected.

Moore St., Nos. 53 *and* 55, n s, 125′ e Ewen St., four-st'y frame warehouse, tin roof; cost, $3,500; owner, Charles Goetz, 57 Moore St.; architect, F. Halmberg; builders, H. Bruchhauser and J. Rueger.

Alterations. — *North Eleventh St.*, n w cor. Third St., repairs, new chimney, etc.; cost, $5,000; owner, D. C. Robbins, 29 Monroe Pl.; architect, W. Dobson; builders, Burns & McCann and C. Dankhasse.

Fort Greene Pl., No. 201, two-st'y brick extension, gravel roof; cost, $3,000; owner, J. G. Burckle, 469 West Thirty-fourth St., New York; architect, C. Werner.

First St., Nos. 180 *and* 182, No. 180, new front only; No. 182, add two stories, tin roof, iron cornice, also one-st'y brick extension, new front; cost, $5,000; owner, George Young, 180 First St.; architect, E. F. Gaylor; builders, Jos. Rodwell and Samuel Hough.

Court St., n e cor. Butler St., new store front, also interior alterations; cost, $3,500; owner, M. Toomey, Twenty-eighth St., New York; architects and builders, M. Freeman's Sons.

Chicago.

Building Permits. — A. Hierman, three-st'y flats, 245 Noble St.; cost, $4,000.

Imperial Building Co., four-st'y store and office-buildings, 258 South Clark St.; cost, $100,000; architect, L. G. Halberg; builder, John Griffiths.

P. Hayes, two-st'y dwell., 713 North Clark St.; cost, $3,000; builder, P. Hayes.

Mrs. C. Thomas, three-st'y flats, 12 Page St.; cost, $10,000; architect, Wilson & Moodry; builder, W. H. Thomas.

Mary E. Sands, 6 two-st'y dwells., 862-872 West Adams St.; cost, $12,000.

Mrs. A. M. Parker, two-st'y dwell., 3667 Michigan Ave.; cost, $9,000; architect, S. J. Pierce; builder, W. H. Sliff.

New York.

The business in building interests at the present moment is at a standstill, and architects are only making preliminary plans.

Building Permits. — *Stanton St., No.* 229, five-st'y brick tenement and store, tin roof; cost, $15,000; owner, Adam Wetzler, 229 Stanton St.; architect, Wm. Graul.

Eighty-eighth St., s s, 76′ w Avenue A, 3 five-st'y brick tenements, tin roofs; cost, each, $13,000; owner, Wm. H. Johnston, 51 East Ninety-first St.; architects, A. B. Ogden & Son.

Fiftieth St., s s, 200′ w Ninth Ave., five-st'y brick tenement, tin roof; cost, $21,000; owner, Deborah W. Slocum, 72 Rodney St., Brooklyn; architect, R. Rosenstock.

Third Ave., n e cor. Forty-first St., five-st'y brick tenement and store, tin roof; cost, $20,000; owner and architect, Jos. Spears, 2281 Third Ave.; builders, J. & W. C. Spears.

Second Ave., w s, 75′ s One Hundred and Fifteenth St., five-st'y brick store and dwell., tin roof; cost, $22,000; owner, architect and builder, same as last.

First Ave., e s, 50′ 5″ n Forty-eighth St., 4 five-st'y brick stores and tenements, tin roofs; cost, $16,000; owner, Mrs. Ann Mulholland, 1324 Lexington Ave.; architect, J. C. Burne.

Fifty-sixth St., s s, 100′ e Ninth Ave., 4 five-st'y brown-stone apartment-houses, tin roofs; cost, $30,000; owner, Charles Riley; architect, J. C. Burne.

One Hundred and Thirty-seventh St., No. 610, four-st'y brick tenement, tin roof; cost, $16,000; owner, Mrs. Mary Woods, 533 East One Hundred and Fifty-third St.; architect, J. C. Burne.

Eighty-first St., s s, 73′ e Ave. A, five-st'y brick tenement, tin roof; cost, $10,500; owner, C. Haenschen, Jr., 114 East One Hundred and Fifteenth St.; architect, John Brandt.

Ave. C, Nos. 43, 45 *and* 47, one-st'y brick church, slate roof; cost, $30,000; owner, St. John the Baptist Foundation, Francis H. Weeks, Treasurer, 11 East Twenty-fourth St.; architect, Henry Vaughan; builders, D. C. Weeks & Son.

Seventy-sixth St., n s, 325′ w Ninth Ave., 12 four-st'y brown-stone front dwells., tin roofs; cost, total, $210,000; owner, John S. Kelso, Jr., 30 East Twenty-second St.; architect, Wm. A. Cable; builder, Geo. E. Broas.

Railroad Ave., e s, 190′ 4″ n One Hundred and Sixty-ninth St., two-st'y frame dwell., tin roof; cost, $4,500; owner, George Hey, 331 Broome St.; architect, Julius Boekell.

Ryer Ave., e s, 225′ n One Hundred and Eighty-second St., two-st'y frame dwell.; gravel roof; cost, $2,500; owner, Drusilla Lynch, 312 West One Hundred and Thirty-fifth St.; architect and builder, E. C. Lynch.

One Hundred and Fifty-seventh St., n s, 200′ n Tenth Ave., three-st'y frame dwell., tin roof, cost, $4,000; owner and builder, C. R. Terwilliger, One Hundred and Fifty-sixth St., near Tenth Ave.; architect, H. Kreitler.

West Tenth St., Nos. 270, 272 *and* 244, four-st'y and attic brick school-house, tin roof; cost, $70,000; owner, City of New York, Stephen A. Walker, President Board of Education, 8 East Thirtieth St.; architect, D. I. Stagg.

Jay St., s e cor. Caroline St., 2 six-st'y brick stores and lofts, metal roofs; cost, each, $21,000; owner, Patrick Skelly, 137 West Fifteenth St.; architect, John B. Snook; builder, John Fish.

One Hundred and Sixty-fifth St., n s, 25′ e Tiffany St., one-st'y frame dwell., shingle roof; cost, $2,500; owner, Ada A. Morgan, 419 East Seventy-eighth St., architect, J. N. Gillespie.

Ninety-first St., n s, 94′ e First Ave., four-st'y brick factory, gravel roof; cost, $15,000; owner, John J. Schillinger, 420 East Ninety-second St.; architects, A. B. Ogden & Son.

Macdougal St., No. 52, five-st'y brick tenement, tin roof; owner, John P. Schweikert, 409 West Fifty-first St.

Philadelphia.

Building Permits. — *Ashmead St.*, between Main and Wakefield Sts., 2 two-st'y dwells., 16′ x 40′; also, three-st'y dwell., 15′ x 26′, *Main St.*, cor. Cumberland St.; Jno. D. Caldwell, contractor.

Twenty-fifth St., above Masted St., three-st'y store and dwell., 16′ x 45′; Jno. G. Ruff, contractor.

Eleventh St., n w cor. Chestnut St., extensive front and interior alterations; Allen B. Rorke, contractor.

Building operations in Philadelphia during the past year showed great activity. The total number of new structures erected was 4,298, against 3727 in 1883, and 2220 in 1882.

St. Louis.

Building Permits. — Fifteen permits have been issued since our last report, eight of which are for unimportant frame houses. Of the rest, those worth $2,500 and over are as follows: —

A. R. Ennis, two-st'y brick dwell.; cost, $4,900; Ennis & Swope, contractors.

C. Balfer, two-st'y brick dwell.; cost, $2,500; A. Wagener, contractor.

Wm. Murphy, two-st'y brick dwell.; cost, $3,000; Wm. Murphy, contractor.

William Stutz, 4 adjacent two-st'y dwells.; cost, $8,000; Hermann & Schumacher, contractors.

M. S. Gray, two-st'y brick dwell.; cost, $8,500; Jno. Mahon, contractor.

C. Hackemeier, two-st'y brick dwell.; cost, $8,000; Aug. Beinke & Co., architects and contractors.

A. Fenner, 2 adjacent two-st'y brick dwells.; cost, $3,000; Koenig, architect; A. Fenner, contractor.

St. Paul, Minn.

Building Permits. — W. H. H. Johnston, two-st'y frame double dwell., 40′ x 40′, w s of Floral St., between Summit and Grand Sts.; cost, $5,000.

William Byrne, two-st'y frame dwelling-house, n s of Martin St., between Mackubin and Arundel Sts.; cost, $4,000.

General Notes.

Allentown, Pa.—Koch & Shankweiler are to build a new hotel in place of the Allen House.

Ansonia, Conn. — House and barn for W. Rowe; cost, $5,000; Palliser, Palliser & Co., architects, Bridgeport, Conn.

Bedford, Mass. — A Catholic church is to be built here.

Brattleboro', Vt.—H. G. Carroll is about remodeling his summer house, at an expense of $7,000, from plans by J. M. Currier, Springfield, Mass.

Bridgeport, Conn. — Francis Duffy is building a frame block for stores, cor. Broad and Whiting Sts., 78′ x 110′, three-st'y; cost, $7,500.

John Rockfeller is building an addition to Elm Hotel, three-st'y, brick; dining-room, 25′ x 50′.

Geo. Hubbel is building two frame houses; cost, $4,500.

A. Carmody, frame house, cor. Columbia and Gregory Sts.; cost, $3,000. W. H. Worsam, architect for the above.

J. A. Herley, two houses on Prospect St.; cost, $9,000.

D. T. Crockett, house; cost, $8,000; Palliser, Palliser & Co., architects.

T. Glasson, block of stores and tenements, Pembroke St.; cost, $7,000.

J. Burns is building a house; cost, $3,000.

D. Nolan, house on California St.; cost, $3,000.

J. J. Phelan is having a house built on Burroughs St.; cost, $4,000.

R. H. Townsend, cottage; cost, $4,500.

P. W. Wren, brick house, State St.; cost, $22,000. Palliser, Palliser & Co., architects of above.

Brockton, Mass. — City of Brockton Fire Department Building, three-st'y, brick and granite, with stable, hose, and bell-tower; cost, $20,000; Eldred & Holmes, contractors.